A COMPARATIVE STUDY TO ASSESS THE NUTRIENT INTAKE AMONG WORKING AND NON-WORKING WOMEN IN LUCKNOW DISTRICT

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THESIS

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by

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Dedicated to

My Parents & Husband

whose cordial love and everlasting blessings have encouraged and enlightened me always.

CERTIFICATE

We the undersigned members are the Chairman and Co-chairman of Archana Singh, a candidate for the degree of Doctor of Philosophy in Home Science (Foods & Nutrition) agree that the Thesis entitled **"A Comparative study to assess the nutrient intake among working and non-working women in Lucknow District"** may be submitted by her in Partial fulfillment of the requirement for the degree. The candidate has worked for more than 200 days to complete the research work.

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(Archana Singh)

CONTENTS

	Particulars	Page Nos.
Chapter I	INTRODUCTION	1 – 25
Chapter II	REVIEW OF LITERATURE	26 – 40
Chapter III	PROFILE OF THE STUDY AREA	41 – 47
Chapter IV	RESEARCH METHODOLOGY	48 – 61
Chapter V	FINDINGS AND DISCUSSION	62 – 91
Chapter VI	SUMMARY AND CONCLUSION	92 – 106
	BIBLIOGRAPHY	107 – 114
	APPENDICES	i - x

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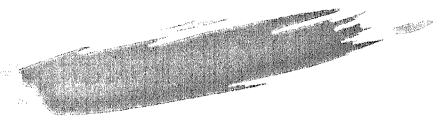
LIST OF TABLES

Table No.	Particular	Page Nos.
5.1	Distribution of respondents on the basis of age group	62
5.2	Distribution of respondents as per type of work	63
5.3	Distribution of respondents on the basis of education	63
5.4	Distribution of respondents on the basis of caste	64
5.5	Distribution of respondents according to religion	65
5.6	Distribution of respondents according to type of family	65
5.7	Distribution of respondents according to family size	66
5.8	Distribution of respondents according to family income	67
5.9	Distribution of respondents according to material possession	68
5.10	Mean height of the working and non-working women respondents	68
5.11	Mean weight of the working and non-working women respondents	69
5.12	Mean BMI of the working and non-working women respondents	69
5.13	Categorization of women respondents according to BMI grade	70
5.14	Categorization of women according to their nutritional status	70
5.15	Clinical assessment of the respondents	72
5.16	Distribution of working and non-working women according to their morbidity pattern	75
5.17	Distribution of the respondents on the basis of food habits	76
5.18	Distribution of working and non-working women on the basis of dietary habits	77
5.19	Snacks intake per day of women	79

Table No.	Particular	Page Nos.
5.20	Distribution of working and non-working women respondents according to heaviest meal	80
5.21	Preference for meals outside home	80
5.22	Preference for place of eating	81
5.23	Distribution of the respondents on the basis of decision regarding meals	82
5.24	Type of cooking method	81
5.25	Washing practices related to vegetables	83
5.26	Distribution of respondents according to food frequency	83
5.27	Nutrient intake of the respondents according to type of work	84
5.28	Mean energy intake by working and non-working women respondents	85
5.29	Mean protein intake by working and non-working women respondents	86
5.30	Mean fat intake by working and non-working women respondents	87
5.31	Mean calcium intake by working and non-working women respondents	87
5.32	Mean iron intake by working and non-working women respondents	88
5.33	Mean β-carotene intake by working and non-working women respondents	89
5.34	Mean thiamine intake by working and non-working women respondents	89
5.35	Mean riboflavin intake by working and non-working women respondents	90
5.36	Relationship between awareness and nutrients intake by working and non-working women	90

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INTRODUCTION



Chapter-I

INTRODUCTION

Women form a major segment of our society, as home-maker and nurtures – their knowledge, awareness and efforts have a marked impact on growth, development and nutritional status of their family members. Before the advent of the modern era, women in Indian were generally confined to home, within the four walls of the house. However, in the Past Independent India, many new vitas have opened up and the women have made themselves free of the fetters in an effort to establish their own identity. In the recent year many of them have had an access to education which has resulted in their intellectual awakening and broadened thinking Education of women especially the nutrition and health related education should be our major thrust area. Nutrition awareness for women is extremely important because they, as nurturers, are engaged in bringing up our future generations.

The first education of the child takes place within the periphery of the family where he/she inherits a certain culture, imbibes certain values, habits and come intern with his/her immediate environment. A woman's contribution in moulding the child surpasses that of any other member of the household and, therefore, it is the mother who needs to be targeted and made nutritionally wiser. The educational level, position, health and nutritional status of the women is central to the quality of life and is a key determinant of family health (Jyothilakshmi, 2004). Her food preferences are reflected in the food purchases she makes and the meals she serves to the family. This in the early years of life will affect the child's food habits which will rather be passed on to the next generation when, today's young will become parents and will serve as role models for their children. As such special attention should be given for the improvement of nutritional awareness among the women

which is also clear from the words of **Dr. M.S. Swaminathan**, "good nutrition is a function of both economy and education". Women's education is hypothesized to exert a major influence on health and nutritional status.

Today many women are moving out form their home in search of better job prospect. Money earning capacity builds status of women not only in her home but also in the society. This view is stressed by **Sheela and Shashikala** (2001) also; who believed women's employment has the potential to benefit household nutrition through increasing the household income. It is an accepted fact that in household with low average food availability, women and children are especially at risk. Thus, the most important social, economic and cultural dimensions which effect women's provision of nutrition are women's employment and women's decision making power visa versa the disposal of their income including marketing of food purchased or purchasing food in the market, on the one hand, and their ability to cook and serve adequate quantities of food to individual household members. It encompasses their nutritional knowledge and autonomy in 'kitchen' decision making, on the other (Khetarpaul, N. and Grover, I., 2001). Increased income in the family of working women may improve the nutritional status of the family but it may also affect her health indeed if she is not nutritionally aware.

The presence of working women may well increase the food consumption of poorer households, even if the women have to travel away from the home to earn money. This is true for a variety of reasons, such as the improved capacity of the wife to exert her preferences within the household (which may reflect society's gender-defined roles rather than some innate preference to buy food) and improved ability to buy food items that require cash in small but reliable flows. For richer households, the net effect on calorie intake and calorie cost may will be zero or

even negative as food (and especially calories, as opposed to micronutrients) becomes a less important component of the budget.

Status of Indian women

Although India has made considerable progress in the economic sphere, it is one of the few countries where men significantly outnumber women. Maternal mortality rate in rural areas figures among the world's highest, and communicable diseases and malnutrition account for majority of the disease burden. Women and girls, particularly the poor, are more susceptible to and trapped in the cycle of disease and illness primarily due to their nutritional status being affected by unequal access to food, health care and heavy work demands. To add to this, very often, they do not receive medical treatment before the illness is well advanced.

In India the nutrition and health status of women is abysmally low. The National Nutrition Monitoring Bureau (NNMB) survey (1990) done in India shows that women's calorie requirement after the age of 10 years is not adequately met. This itself indicates whether women are victims or decision-makers. The poor health status of women in India is mainly due to patriarchy and other socio-cultural constraints leading to her secondary status at home and poor health. It is a bitter reality that in India women's health and nutrition is inextricably linked to social, cultural and economic factors.

In India when the food intake of the "privileged" and "underprivileged" males and females was compared it was realized that 24 per cent of the females were malnourished in the privileged group, while 74 per cent were malnourished among the underprivileged. The percentage for males was lower in both cases; 14 per cent among the privileged and 67 per cent in the underprivileged.

In some cultural and social contexts in India, women are prohibited from eating essential quality food particularly during menstruation, pregnancy and

lactation such as milk and green leafy vegetables. In India parents who wish to postpone the marriage of their daughters often limit their food intake because they fear that girls who are well nourished will mature at a younger age, and this will place them at a vulnerability of early marriage.

Ancient Indian Women

In ancient times Aryans were the main inhabitant of India. These people were mainly Brahmins and they used to give the status of goddess to the women. At that time women enjoyed no less than status of 'Lakshmi' (goddess of wealth) in the households. A famous Sanskrit shloka (form of Hindu verse) signifies the status of women in that era, "Yatra naryastu pujyante, ramante tatra devta" meaning, the place where women are worshipped, god themselves inhabit that place. The women of ancient times had immense power this is evident from a South Indian legend that once a king accidentally killed the husband of a women and she had such powers that she burnt the whole kingdom to ashes. Women in that time had place even superior to men. They had representation in each arena from assemblies to religious rituals. In fact no religious ritual of Hindu Brahmins was supposed to be complete without the presence of the women. An incident of Ramayana is a proof of this as when Lord Rama was performing "Ashvamedha yajna" his wife Sita was not with him and he had to use the gold idol of his wife to compensate for her absence.

Ancient Indian women had say in each and every aspect related to their lives. They had the right to choose their own life partners. The process of choosing the life partner of own choice was known as "Swayamvar" in which grooms assembled at the house of bride and she used to choose the one whom she liked. Maharishi Ved Vyas' Mahabharata and Mahrishi Valmiki's Ramayana bear testimonial to this. In Mahabharata, Draupadi's father arranged for her 'Swanyamvar' and Arjuna (a

Pandava prince in exile) successfully managed to fulfill the conditions and became eligible to marry her.

Even the model women of Tretayuga, (second out of four ages of Hindu mythology) "Sita" also had 'Swanyamva' in which kings of different states participated and Lord Rama won her over by breaking the "Shiv Dhanusha". (Hindu God Shiv's bow) Not only just princely women but the common women were also given the same rights. Women were so important that many of the major battles were fought for them. The fiercest battle of ancient India Mahabharata was fought for the honor of Draupadi (wife of Pandavas, ruler of Indraprastha). The Kauravas (ruler of Hastinapur) insulted her in the court and this led to the enmity between cousins and resulted in the most devastating battle of ancient India.

Another example of women power is evident from the cause of death of most learned man of his time Ravana. He was the best scholar of his time and was the master of all the four Vedas of Hindu religion and had immense powers. Even gods were not able to defeat and kill him but a woman was able to bring his doom. Ravana captured Sita and tried to marry her forcibly which led to his destruction.

Women were not just confined to domestic arena but they were also part of religious teachings. In ancient India woman like Gayatri, Maitreyi, Anusuya were renowned seers of their time this shows that women had the right to religious teachings. They were not prohibited even from learning. They could learn whatever they wanted.

The status of women of Vedic era began to decline with time. Gender inequality started creeping into the society. Slowly women's status degraded to such an extent that they were not given the freedom, which was available to even Sudras (lowest caste of ancient Hindu society). They were not given the basic rights. They were debarred from religious practices. They began to lose their political freedom

as well. As Vedic age progressed, the status of women became worst. And till the time of 'Smirits' (religious scripture of Hindus) the condition became so bad that women were not allowed free access to education they were given education related to just domestic purposes.

Medieval Indian Women

Medieval India was not women's age it is supposed to be the 'dark age' for them. Medieval India saw many foreign conquests, which resulted in the decline in women's status. When foreign conquerors like Muslims invaded India they brought with them their own culture. For them women was the sole property of her father, brother or husband and she does not have any will of her own. This type of thinking also crept into the minds of Indian people and they also began to treat their own women like this. One more reason for the decline in women's status and freedom was that original Indians wanted to shield their women folk from the barbarous Muslim invaders. As polygamy was a norm for these invaders they picked up any women they wanted and kept her in their "harems". In order to protect them Indian women started using 'Purdah', (a veil), which covers body. Due to this reason their freedom also became affected. They were not allowed to move freely and this lead to the further deterioration of their status. These problems related with women resulted in changed mindset of people. Now they began to consider a girl as misery and a burden, which has to be shielded from the eyes of intruders and needs extra care. Whereas a boy child will not need such extra care and instead will be helpful as an earning hand. Thus a vicious circle started in which women was at the receiving end. All this gave rise to some new evils such as Child Marriage, Sati, Jauhar and restriction on girl education

- **Sati**: The ritual of dying at the funeral pyre of the husband is known as "Sati" or "Sahagaman". According to some of the Hindu scriptures women dying at

the funeral pyre of her husband go straight to heaven so its good to practice this ritual. Initially it was not obligatory for the women but if she practiced such a custom she was highly respected by the society. Sati was considered to be the better option then living as a widow as the plight of widows in Hindu society was even worse. Some of the scriptures like 'Medhatiti' had different views it say that Sati is like committing suicide so one should avoid this.

- **Jauhar**: It is also more or less similar to Sati but it is a mass suicide. Jauhar was prevalent in the Rajput societies. In this custom wives immolated themselves while their husband were still alive. When people of Rajput clan became sure that they were going to die at the hands of their enemy then all the women arrange a large pyre and set themselves afire, while their husband used to fight the last decisive battle known as "Shaka", with the enemy. Thus protecting the sanctity of the women and the whole clan.
- **Child Marriage**: It was a norm in medieval India. Girls were married off at the age of 8-10. They were not allowed access to education and were treated as the material being. The plight of women can be imagined by one of the shloka of Tulsidas where he writes [r1] "Dhol, gawar, shudra, pashu, nari, ye sab tadan ke adhikari". Meaning that animals, illiterates, lower castes and women should be subjected to beating. Thus women were compared with animals and were married off at an early age. The child marriage along with it brought some more problems such as increased birth rate, poor health of women due to repeated child bearing and high mortality rate of women and children.
- **Restriction on Widow Remarriage**: The condition of widows in medieval India was very bad. They were not treated as human beings and were

subjected to a lot of restrictions. They were supposed to live pious life after their husband died and were not allowed entry in any celebration. Their presence in any good work was considered to be a bad omen. Sometimes heads of widows were also shaved down. They were not allowed to remarry. Any woman remarrying was looked down by the society. This cruelty on widows was one of the main reasons for the large number of women committing Sati. In medieval India living as a Hindu widow was a sort of a curse.

- **Purdah System**: The veil or the 'Purdah' system was widely prevalent in medieval Indian society. It was used to protect the women folk from the eyes of foreign rulers who invaded India in medieval period. But this system curtailed the freedom of women.
- **Girl Education**: The girls of medieval India and especially Hindu society were not given formal education. They were given education related to household chores. But a famous Indian philosopher 'Vatsyayana' wrote that women were supposed to be perfect in sixty four arts which included cooking, spinning, grinding, knowledge of medicine, recitation and many more.

Though these evils were present in medieval Indian society but they were mainly confined to Hindu society. As compared to Hindu society other societies such as Buddhism, Jainism and Christians were a bit lenient. Women in those societies enjoyed far more freedom. They had easy access to education and were more liberal in their approach. According to these religions gender was not the issue in attaining salvation. Any person whether a man or a woman is entitled to get the grace of god. During the time of king Ashoka women took part in religious preaching. According to Hiuen Tsang,

the famous traveler of that time, Rajyashri, the sister of Harshavardhana was a distinguished scholar of her time. Another such example is the daughter of king Ashoka, Sanghmitra. She along with her brother Mahendra went to Sri Lanka to preach Buddhism.

The status of women in Southern India was better than the North India. While in Northern India there were not many women administrators, in Southern India we can find some names that made women of that time proud. Priyaketaladevi, queen of Chalukya Vikramaditya ruled three villages. Another women named Jakkiabbe used to rule seventy villages. In South India women had representation in each and every field. Domingo Paes, famous Portuguese traveler testifies to it. He has written in his account that in Vijaynagar kingdom women were present in each and every field. He says that women could wrestle, blow trumpet and handle sword with equal perfection. Nuniz, another famous traveler to the South also agrees to it and says that women were employed in writing accounts of expenses, recording the affairs of kingdom, which shows that they were educated. There is no evidence of any public school in northern India but according to famous historian IBN Batuta there were 13 schools for girls and 24 for boys in Honavar. There was one major evil present in South India of medieval time. It was the custom of Devadasis.

- **Devadasis**: It was a custom prevalent in Southern India. In this system girls were dedicated to temples in the name of gods and goddesses. The girls were then onwards known as 'Devadasis' meaning servant of god. These Devadasis were supposed to live the life of celibacy. All the requirements of Devadasis were fulfilled by the grants given to the temples. In temple they used to spend their time in worship of god and by singing and dancing for

the god. Some kings used to invite temple dancers to perform at their court for the pleasure of courtiers and thus some Devadasis converted to Rajadasis (palace dancers) prevalent in some tribes of South India like Yellamma cult.

The plight of women in medieval India and at the starting of modern India can be summed up in the words of great poet Rabindranath Tagore: "O Lord Why have you not given woman the right to conquer her destiny? Why does she have to wait head bowed, By the roadside, Waiting with tired patience, Hoping for a miracle in the morrow?"

Modern Indian Women

The status of women in modern India is a sort of a paradox. If on one hand she is at the peak of ladder of success, on the other hand she is mutely suffering the violence afflicted on her by her own family members. As compared with past women in modern times have achieved a lot but in reality they have to still travel a long way. Their path is full of roadblocks. The women have left the secured domain of their home and are now in the battlefield of life, fully armored with their talent. They had proven themselves. But in India they are yet to get their dues. The sex ratio of India shows that the Indian society is still prejudiced against female. There are 933 females per thousand males in India according to the census of 2001, which is much below the world average of 990 females. There are many problems which women in India have to go through daily. These problems have become the part and parcel of life of Indian women and some of them have accepted them as their fate.

The main problems of Indian women includes

- **Malnutrition :** Generally in India, women are the one who eat last and least in the whole family. So they eat whatever is left after men folk are satiated. As a result most of the times their food intake does not contain the nutritional value required in maintaining the healthy body. In villages, sometimes

women do not get to eat the whole meal due to poverty. The UNICEF report of 1996 clearly states that the women of South Asia are not given proper care, which results in higher level of malnutrition among the women of South Asia than anywhere else in the world. This nutritional deficiency has two major consequences for women first they become anemic and second they never achieve their full growth, which leads to an unending cycle of undergrowth as malnourished women cannot give birth to a healthy baby.

- **Poor Health** : The malnutrition results in poor health of women. The women of India are prejudiced from the birth itself. They are not breastfed for long. In the want of a son the women wants to get pregnant as soon as possible which decreases the caring period to the girl child whereas the male members get adequate care and nutrition. Women are not given the right to free movement that means that they cannot go anywhere on their own if they want and they have to take the permission of male member of family or have to take them along. This results in decrease in women's visit to doctor and she could not pay attention to her health as a result.
- **Maternal Mortality** : The mortality rate in India is among highest in the world. As females are not given proper attention, which results in the malnutrition and then they are married at an early age which leads to pregnancies at younger age when the body is not ready to bear the burden of a child. All this results in complications, which may lead to gynecological problems, which may become serious with time and may ultimately, lead to death.
- **Lack of education** : In India women education never got its due share of attention. >From the medieval India women were debarred from the educational field. According to medieval perception women need just

household education and this perception of medieval India still persists in villages of India even today. Girls are supposed to fulfill domestic duties and education becomes secondary for them whereas it is considered to be important for boys. Although scenario in urban areas has changed a lot and women are opting for higher education but majority of Indian population residing in villages still live in medieval times. The people of villages consider girls to be curse and they do not want to waste money and time on them as they think that women should be wedded off as soon as possible.

The main reason for not sending girls to school is the poor economic condition. Another reason is far off location of schools. In Indian society virginity and purity is given utmost importance during marriage and people are afraid to send their girl child to far off schools were male teacher teach them along with boys.

The lack of education is the root cause for many other problems. An uneducated mother cannot look after her children properly and she is not aware of the deadly diseases and their cure, which leads to the poor health of the children. An uneducated person does not know about hygiene this lack of knowledge of hygiene may lead to poor health of the whole family.

- **Mistreatment :** In India violence against women is a common evil. Not just in remote parts but in cities also women bear the brunt. They are subjected to physical and mental violence. They are the one who work most but are not given their due. The women is not safe anywhere neither at home nor at workplace. Every hour a woman is raped in India and every 93 minutes a woman is burnt to death due to dowry problem. There are many laws such as The Hindu Marriage Act of 1955, The Hindu Succession Act of 1956, The Hindu Widow Remarriage Act of 1856, The Hindu Women Right to Property Act of 1937, The Dowry Prohibition Act of 1961, to protect women

and punishment is severe but the conviction rate of crime against women is very low in India.

- **Overworked :** Indian women work more than men of India but their work is hardly recognized as they mainly do unskilled work. Their household chores is never counted as a work, if a woman is working in a field to help her husband it will also be not counted as a work. A study conducted by Mies in 1986 states that in Andhra Pradesh a woman works around 15 hours a day during the agricultural season whereas a male on an average works for around 7-8 hours.
- **Lack of power :** In India a large percentage of women do not have power. They cannot take decisions independently not even related to their own life. They have to take permission of male members for each and every issue. They don't have any say in important household matters and not in matter of their own marriage.
- **Marriage :** The family mainly fixes the marriages in India. The scenario in villages is very bad. The girl is not consulted but is told to marry a guy whom her family has chosen for him. They are taught to abide by the whims and fancies of their husbands. Going against the wishes of husband is considered to be a sin. In marriage husband always has the upper hand. The groom and his parents show as if they are obliging the girl by marrying her and in return they demand hefty dowry.
- **Dowry :** It's a serious issue. Courts are flooded with cases related to death due to dowry harassment by husband and in laws. In ancient times women were given 'Stridhan' when they departed from the house of their parents. This amount of money was given to her as a gift which she can use on her and her children but her in-laws did not have any right on that amount. This

amount was supposed to help the girl in time of need. Slowly this tradition became obligatory and took the form of dowry. Nowadays parents have to give hefty amount in dowry, the in laws of their girl are not concerned whether they can afford it or not. If a girl brings large amount of dowry she is given respect and is treated well in her new home and if she does not bring dowry according to expectations of her in laws then she has to suffer harassment. Due to this evil practice many newly wed women of India have to lose their lives.

- **Female infanticide/foeticide :** As women were supposed to be and in some areas of India are still considered to be curse by some strata of society their birth was taken as a burden. So in past times they were killed as soon as they were born. In some of the Rajput clans of Rajasthan newly born girl child was dropped in a large bowl of milk and was killed. Today with the help of technology the sex of the unborn baby is determined and if it is a girl child then it is aborted down. In all this procedure women do not have any say they have to do according to the wish of their husbands even if she does not wan to abort she have any choice.
- **Divorce :** The divorce rate in India is not so high compared to western countries but it does not mean that marriages are more successful here. The reason behind low level of divorce rate is that it is looked down by the society. It is regarded as the sign of failure of marriage, especially of women. She is treated as if she has committed some crime by divorcing her husband. In some communities like Muslims women did not have the right to divorce their husband they were divorced at just the pronouncement of " I divorce you" by their husband thrice and they could not do anything except to be the mute spectator. Recently Muslim Law Board has given right of divorce to

women. After divorce women is entitled to get her "Mehr" for herself and her children's sustenance. In Hindu society women get maintenance for themselves and their children after divorce.

Employment of women

Out of the total 397 million workers in India, 123.9 million are women. Of these, roughly 106 million women work in rural areas and the remaining 18 million work in urban areas. 96 per cent of the women workers are in the unorganized sector. Overall, the female work participation rate has increased from 19.7 per cent in 1981 to 25.7 per cent in 2001. In the rural areas, it has increased from 23.1 per cent to 31 per cent and in the urban areas from 8.3 per cent to 11.6 per cent. Although more women seek work, a vast majority of them get only poorly paid jobs in the informal sector, without any job security or social security. This is because of the increasing unemployment and under employment among the male members of the family and the increasing cost of living as a result of the neo liberal economic policies.

The most serious hazard faced by the working class in the era of globalisation is the increasing threat to job security. The informal sector is fast expanding, while the organized sector is shrinking. Contract, casual, temporary, part-time, piece-rated jobs and home based work etc. are increasingly replacing permanent jobs. To circumvent resistance to amendments to labour laws and to give the employers the freedom to hire and fire workers, the governments of the day are resorting to various back door measures. The NDA government had introduced 'fixed term' employment through an administrative order, which continues under the present UPA regime. Special Economic Zones, which are areas deemed to be outside our territory, are being opened in large numbers throughout the country.

While there is no explicit provision that labour laws would not be applied in these zones, in practice, even labour commissioners are not allowed inside these zones and the workers are practically at the mercy of the employers. Neither the central nor the state governments intervene to protect the interests of the workers. Even in the public sector, the number of contractor workers is increasing.

On the pretext of abolishing 'Inspector Raj' attempts are being made to give a free hand to the employers to flout all labour laws with impunity. The UPA government has introduced bills giving exemption to small and medium enterprises from maintaining several records and registers, which mostly relate to the workers. It has also changed the definition of small enterprises by increasing the number of workers. Due to the strong opposition from the Left parties and trade unions, the government has agreed to remove the labour related clauses from the bills, though the bills in the new form have not yet been introduced in the parliament. All these have adverse impact not only on the working conditions of the workers, but also on their health.

The workers in the informal sector, a large number of who are women, have no job security. Work is often unskilled or low skilled and low paid. Availability of work is irregular; when work is available, they have to work for long hours. Not just in the unorganized sector or in the small enterprises, but also in the modern sectors like the IT, automobile industry etc., workers are forced to work for 12 hours while the concerned governments choose to ignore this open flouting of the labour laws. The uncertainties in getting work and the dire need to keep it in the midst of intense competition and the necessity to evolve strategies for this, cause mental tension, strained social relationships, psychological problems and chronic fatigue, all of which are difficult to prove as work related.

Piece related work contributes significantly to the level of fatigue felt by the workers. The wages of piece related workers depend on the speed with which they work. Some studies indicate that out of the workers who suffer from neurosis, 71 per cent are piece rated workers as against 26.5 per cent who receive daily or monthly wages.

Several traditional industries where women work in large numbers like coir, handloom, food processing etc. have undergone changes in the forms of production with the introduction of machines, power looms etc. which result in the loss of employment for large number of women. With the introduction of machines, women in manufacturing are replaced by me.

Unemployment, underemployment and temporary work are more common among women than among men. The workers do not have any social security or health care benefits. As a result, the work-related illnesses, which they suffer from, remain hidden. As per available research, unemployment is harmful to health and constitutes a serious risk for the workers emotional stability, because it leads to poverty, deteriorates self-image and self-esteem.

It is generally believed that women prefer part-time, temporary or home-based work because such jobs enable them to balance their job responsibilities with their domestic responsibilities. But in fact, making working hours flexible as per the requirement of the employers makes it more difficult for the women workers to adjust their domestic responsibilities with the working hours at their workplace and disrupts family life. Absence of clearly defined work schedule increases the stress and impacts their health.

A large number of women workers complain of frequent headache, back pain, circulatory disorders, fatigue and emotional and mental disorders. Poor nutritional status, anaemia due to poverty and the cultural practices, where women

eat last and the increased workload due to domestic responsibilities, lead to fatigue among women. Worry, responsibility, strong emotions, concentrated attention or precision required by some jobs like embroidery, assembly of electronic or electric appliances, gems, jewellery etc. and exhaustion caused by intellectual or mental activities also produce fatigue. A large number of women workers complain of symptoms such as irritability, mood swings, depression, sadness and concentration problems. The exhausting conditions make it difficult to recognise these states as 'abnormal'. Fatigue is generally not considered an illness, but if it is neglected, it can lead to a variety of illnesses.

Certain types of work, where the worker is subordinated to machines, which are boring and do not require any personal initiative, also cause fatigue. The attitudes of the employers or supervisors that tend to create feelings of inferiority, uselessness or inability also result in mental fatigue. Various studies show that fatigue and stress related illnesses are common in the sectors that employ mostly women. A study on data entry operators indicated high levels of fatigue and stress due to the intense pressure of their work, the high degree of job dissatisfaction and the lack of initiative and creativity required by the position.

Hazards faced by working women at the workplace

Majority of women working in the organized sector have been employed in the public sector. But with restructuring and downsizing of workforce in the public sector and government departments, as a part of the neo-liberal policies, women are the first to be retrenched, because of the general perception that women's income is supplementary. Women have been forced to go on VRS in some banks, under threat to transfer to far-off places; Coal India has formulated a special VRS package for women.

Large numbers of women work in schools, hospitals, as sales persons in shops, in plantations, in construction etc. It is found that even in many government hospitals and schools, there are no separate toilets for women. Lack of such basic facilities like toilets, rest rooms, dining spaces, etc. at the workplace cause a lot of physical discomfort and mental stress besides leading to several urinary tract and other diseases, particularly, among pregnant women.

Women working in the informal sector do not have any child-care facilities. Even in the organized sector, crèches are not provided in most of the establishments. Even where they do exist, they are either ill-equipped or are not maintained properly, as a result of which women are reluctant to keep their children in such crèches. Most often women workers, particularly in the informal sector, are forced to leave their children at home, under the care of their elder children, or old people or neighbours. This causes great anxiety and emotional strain. Some studies indicate that this is a major problem for working women

Sexual harassment is another serious hazard faced by working women. Whether in the organized or unorganized sector, whether illiterate, low paid workers or highly educated and highly paid executives, a large number of working women face sexual harassment at the workplace. Nearly a decade after the Supreme Court judgment in the Visakha case, the government is yet to bring legislation against sexual harassment at workplace. Even the Supreme Court guidelines of constituting complaints committees, amending standing orders, creating awareness etc. have not been implemented in most of the establishment.

The government has decided to amend "The Factories Act" allowing women workers to work in the night shift. Women have been working in hospitals, in the telecom department and in the fish processing industry in the night shift. But in the era of globalisation, the export oriented units and call centres etc. are employing

women in large numbers in the night shift, without providing proper protection or transport facilities to them. Besides, women who work in the night shift generally are not in a position to take proper rest during the day because of their domestic responsibilities, impacting their health.

Women working in some industries like construction, brick kilns, electronics industry etc. suffer from gynaecological problems, miscarriages, premature deliveries etc. and give birth to babies with low birth weight or birth defects. Given the socio-economic conditions of these women, these often lead to tension and strained relations in the family, along with the physical problems.

The Factories Act, The Mines Act, The Dock Workers' Act etc. are some of the laws, which contain provisions for regulating the health of the workers in an establishment. The Employees' State Insurance Act and the Workmen's Compensation Act provide health benefits and compensation to the workers in cases of ill-health and injuries etc. But in the unorganized sector where the majority of women workers are concentrated, no occupational safety and health safeguards are in place. Even in the organized sector, where these are applicable, safeguards are rarely provided for the workers, either male or female. Usually the safety devises are designed keeping the male workers in view and become unsuitable for women workers. Besides, the social aspects of work are not considered risk factors. As a result, more emphasis is given to work related accidents than to illnesses.

Hazards related to the attitude of society and family

Though more and more women are coming out in search of paid employment and their families also need their income, the attitude towards women and their role in the family has not undergone much change. Women continue to be perceived as weak, inferior and second-class citizens. In capitalist society, this feudal attitude is

utilized by the capitalist classes to further exploit women and increase their profits. For working women, this discrimination is extended to the workplace also.

Even today, looking after the family and children is generally perceived to be the primary responsibility of women. With the State retreating from its minimum responsibilities of providing welfare measures and privatization of basic services like health, education etc., and women are forced to spend more time and energies on these responsibilities towards their children and other family members. The unpaid labour of women in providing these services to the family increases their burden while at the same time helping the employers in keeping the wages low.

Because of this perception, which is prevalent even among most of the working women, women have to shoulder the entire burden of domestic chores, which they try to complete before leaving for work with little help from the other, particularly the male members of the family. Many women have reported not to have a proper meal before leaving to work. Improper and insufficient dietary intake along with the heavy workload results in nutritional disorders. In addition, this perception that they alone are responsible for the domestic work, leads to a feeling of guilt when they are not able to look after the children or the family due to their official work, often resulting in emotional disorders.

Hazards faced by women trade unionists

Working women face double burden due to their domestic and official responsibilities. That is one of the important reasons for women not coming forward to take more responsibilities in the trade unions. It is very rare to find family support for women who play an active role in trade union activities. Besides the physical burden, women trade union activists often become victims of character assassination. There have been many instances where women trade union leaders

had to face physical and mental violence, including attempts to murder and murder, from family members because of their trade union activities.

Women are malnourished

The exceptionally high rates of malnutrition in India are rooted deeply in the soil of inequality between men and women. "The poor care that is afforded to girls and women by their husbands and by elders is the first major reason for levels of child malnutrition that are markedly higher in India than anywhere else in the world".

This point is made in the article, The Asian Enigma, published by UNICEF in the 1996 Progress of Nations, in which the rates of childhood malnutrition in South Asia are compared with those in Africa. We learn that malnutrition is far worse in South Asia, directly due to the fact that women in South Asia have less voice and freedom of movement than in Africa. "Judgment and self-expression and independence largely denied, millions of women in South Asia have neither the knowledge nor the means nor the freedom to act in their own and their children's best interests.

"Gender disparities in nutrition are evident from infancy to adulthood. In fact, gender has been the most statistically significant determinant of malnutrition among young children and malnutrition is a frequent direct or underlying cause of death among girls below age 5. Girls are breast-fed less frequently and for shorter durations in infancy; in childhood and adulthood, males are fed first and better. Adult women consume approximately 1,000 fewer calories per day than men according to one estimate from Punjab. Comparison of household dietary intake

studies in different parts of the country shows that nutritional equity between males and females is lower in northern than in southern states."

Nutritional deprivation has two major consequences for women, they never reach their full growth potential and anaemia. Both are risk factors in pregnancy, with anaemia ranging from 40-50 per cent in urban areas to 50-70 per cent in rural areas. This condition complicates childbearing and result in maternal and infant deaths and low birth weight infants.

One study found anaemia in over 95 per cent of girls ages 6-14 in Calcutta, around 67 per cent in the Hyderabad area, 73 per cent in the New Delhi area, and about 18 per cent in the Madras area. This study states, "The prevalence of anaemia among women ages 15-24 and 25-44 years follows similar patterns and levels. Besides posing risks during pregnancy, anaemia increases women's susceptibility to diseases such as tuberculosis and reduces the energy women have available for daily activities such as household chores, child care and agricultural labour. Any severely anaemic individual is taxed by most physical activities, including walking at an ordinary pace.

Women and nutrition

India is a country of rich natural resources and talented human resources and yet its dream of becoming self-sufficient and considered a "developed country" rather than a "developing country" seems a distant reality due to the complexity of its problems.

India, the second most populous country in the world, has no more than 2.5 per cent of global land but is the home of $1/6^{th}$ of the world's population. Its high population density makes it appear as a resource poor country despite its significant achievements in the fields of medicine, agriculture, industry, literature, nuclear

physics and information technology. One of the reasons is that 36 per cent of its population still lives below the poverty line.

Majority of Indian population lives in rural areas (72 % rural as compared to 28 % urban population) where the pace of progress in literacy, education, employment and technology is slow; urban areas get the maximum benefits of the progress.

The patriarchal system prevalent in India (except in one state) makes women the worst victims of poverty as their multifaceted responsibilities include that of a carer, giver and a protector. Women are socialized to be self-sacrificing from childhood onwards to give first and take only if somebody chooses to give or if there is something extra to give.

Women work more at home as well as at the work place, to take care of the families particularly men and children, but they earn much less than men because majority of them are engaged in self-employed, unprotected work with no social security benefits. This is more true among those women belong to the low socio-economic groups in urban slums and rural areas. Women receive the minimum benefits of health care, nutrition and economic gains which is evident from the fact that level of anaemia among women ranges from 50-80 per cent which is a major contributor of the high maternal morbidity and mortality in India.

Justification of the Study:

In the words of Rousseau "Where there is no mother, there can be no child, their duties are reciprocal, and if they are badly fulfilled on one side, they will be neglected on the other".

This quotation is very appropriate to the subject of adequate nutrition for each woman. The belief that a woman should eat better foods and more

food (for pregnant women) is as old and has been held by both the extremes layman and scientists. So there is always a need for such a study, which may provide a database to show the exact picture of the concerned area regarding food, nutrition and health.

Selecting state like Uttar Pradesh has enough points to prove the same. According to National Family Health Survey, India, 1998-99, U.P. lies behind the national average, no matter if we consider food consumption, or BMI or anemia. In U.P. 30 per cent of women were found to be malnourished.

Keeping in view the above facts, the present study has therefore, been designed to compare the nutrient intake among working and non-working women in Lucknow district with the following specific objectives.

1. To study the socio-economic status of working and non-working women.
2. To assess the nutritional status of working and non-working women.
3. To study the dietary pattern and nutrient intake of the women.
4. To develop low cost recipes for the respondent including time and money.
5. To develop the nutrition package for awareness purpose among working and non-working women.



REVIEW OF LITERATURE

Chapter-II

REVIEW OF LITERATURE

Review of literature is very important for any type of research work. A systematic and thorough review of previous research studies related to the problem under study help in analyzing the problem, its historical status, its development and current status. Considering the breath of the issues under study, a brief review of available literature is presented in this chapter, which provides a basis for the theoretical framework and interpretation of findings. The reviews are presented here as follows.

Rao and Vijayraghavan (1996) stated that body weight is the most widely used and the simplest reproducible anthropometric measurement for the evaluation of nutritional status. It indicates the body mass and is a composite of all body constituents like water, mineral, fat, protein, bone etc.

Mitchell (1997) reported that height is a reflection of post nutritional status whereas other measurement refer more to current or transitory nutritional status.

Popatia and Wend (1997) defined socio-economic status as a position of person in a society by his or her education and income.

Velkoff and Arjun (1998) said that women play a central role in child care and food processing even when their economic roles require extensive time and physical energy. Poor health has repercussions not only for women but also their families.

Chee *et al.* (1998) reported that habitual food consumption studies are important to find out the relationship of diet to nutritional status, particularly to identify population at risk to inadequate intakes. It is also useful to collect data

on the usual intake of the adult population for purpose of formulating dietary guidelines, recommended dietary allowances, national food policies, food fortification and food assistance programmes.

FAO (1998) reported that the average Indian dietary intake remains largely deficient in the consumption of green leafy vegetables, milk and milk products, fish and meat.

Carol S. Coonrod (1998) stated that the persistence of hunger and object poverty in India and other parts of the world is due in large measures to the subjugation, marginalization and disempowerment of women. Women suffer from hunger and poverty in greater numbers and to a great degree than men. At the same time, it is women who bear the primary responsibility for actions needed to end hunger, education, nutrition, health and family income. Looking through the lens of hunger and poverty, there are seven major areas of discrimination against women in India. Malnutrition, poor health, lack of education, overworks unskilled, mistreatment and powerlessness.

He also stated that nutritional deprivation has two major consequences for women. They never reach their full growth potential and anaemia. Both are risk factors in pregnancy, with anaemia ranging from 40-50 per cent in urban areas to 50-70 per cent in rural areas. This condition complicates childbearing and results in maternal and infant death and low weight infants.

Bisnoi *et al.* (1999) suggested that anthropometry is a powerful tool for the assessment of nutritional status, particularly in field conditions where it is difficult to conduct clinical and laboratory tests. Weight and structure are the two basic measurements used for assessing the nutritional status, and body mass index, which is derived form anthropometric measurement is also an important indicator to assess the current forms of malnutrition in a community.

Stainley *et al.* (1999) defined anthropometry as the measurement of physical dimensions of human body. It involves the external measurement of morphological traits of human being.

Shariff Mallick (1999) reported that Indian food basket has changed drastically, the share of cereals in the food basket has gone down both in rural and urban areas. On the other hand the share of other food items has increased. The energy derived has declined whereas the consumption of fat has increased. Consumption of iron, which is an important constituent of food, contributed mostly (two-third) by cereals both in rural and urban areas. Due to changing structure of food basket from cereals to other food items and particularly from coarse cereals (which contain more iron) to finer cereals. To fill the gap we need to take more green leafy vegetables in our diet.

Subramanian (1999) reported that as income increases, there is an increase in the consumption of "protective" foods such as pulses, fruits, milk and dairy products, which while adding to calories, contribute significantly to the increase in other nutrients, whose intake is particularly lacking in the diet of poor. Throughout the developing world high incidence of disease is associated with inadequate intake or absorption of micronutrients while the intake of nutrients such as fat, calcium, riboflavin and vitamins etc. appear to be rising steadily with income, the intake of vitamin A and iron are poorly correlated with income. They also said that India has a nutritional problem both of too much and too little. People of lower strata do not get the recommended amount of energy, protein, fats, iron and calcium. People of higher strata get more than double what is recommended. Good nutrition is not only a matter of balance between intake and output, but also the absolute level of intake. For us the real problem with protein, iron and fat deficiency is low consumption of cereals. So the

consumption of cereals, particularly whole cereals and coarse cereals will help us to meet the problem of malnutrition.

Vazir, S. (1999) defined malnutrition as an ecological problem that does not occur alone, its consorts are poverty, distributed family structure, ignorance and despair.

Doth and Mortha (1999) suggested that women should consume daily iron and foliate supplements when they are pregnant and for at least three months after childbirth and should receive other micronutrients as needed. In areas where many women suffer chronic energy deficiency and there is a high incidence of low birth weight, pregnant and lactating women may need high energy food supplements. Educational programmes and public information campaigns can also help to address cultural norms that prevent women from eating enough.

Doak *et al.* (2000) stated that the nutritional intake of individuals varies considerably by demographic and socio-economic conditions within the household and sometimes even for the same individuals within the same household at different points in time.

Nussbaum (2000) underlines the importance of women's participation in paid work for their higher well-being. She argues, for instance, that a woman who has no freedom to work outside their home does not have the same freedom of association as one who does.

Capoor and Chetna (2000), India has made considerable progress in the economic sphere, it is one of the few countries where men significantly outnumber women.

Ratzan *et al.* (2000) stated that malnutrition refers to any disorder of nutrition, whether it is due to dietary deficiency called under nutrition, or to

excess diet call over-nutrition. It results form imbalance between the needs of the body's and intake of nutrients. Malnutrition worldwide includes a spectrum of nutrient related disorders, deficiencies and conditions such as intrauterine growth retardation, protein-energy malnutrition. Iodine deficiency disorder, vitamin A deficiency disorder, iron deficiency anaemia and overweight/obesity and other diet related non-communicable diseases.

Capoor and Chetna (2000) reported that women work twice as much as men equally at home as well as the work place. However, it is been argued that while the women's additional work is helpful to increase the household income, it may not always lead to an improved diet due to change in priorities.

Katherine (2000) found in a study that working homemakers ate healthier than non-working homemaker working home makers consumed more bread/cereals/pasta, carbohydrates, protein, iron and calcium. In addition, working homemakers consumed approximately 200 more calories per day. Conversely non-working homemakers had higher intakes of fruit and vitamin A. She suggested that these differences may be attributed in part to the higher incomes of working homemakers who would have more money to spend on food.

Maskarinee *et al.* (2000) investigated the relationship between dietary pattern and body mass index in a cross sectional study and found association in direction and magnitude for all ethnic group and showed that choosing the right foods may be important in weight control and food based dietary pattern may be useful in dietary counseling among the women.

Devi and Geerwani (2000) presented in their study that literate women with higher awareness levels were more concern about their family members. They managed the amount that they earned more efficiently so as to make their families secure with food and nutrition.

Smolin and Grosvenor (2000) said that poor quality diet and increased nutrient needs cause malnutrition even in population with adequate food supply.

Park (2000) reported that immune-competence is reduced in individual with iron deficiency.

Geneva ACC/SCN (2000) reported that women are more likely to suffer from nutritional deficiencies than men are for reasons including women's reproductive biology, low social status, poverty, and lack of education. Socio-cultural traditions and disparities in household work patterns can also increase women's chances of being malnourished. Globally, 50 per cent of all pregnant women are anaemic and at least 120 million women in less developed countries are underweight. Underweight hinders women's productivity and can lead to increased rates of illness and mortality.

Black, E. Robert (2001) found that the widespread prevalence of anaemia is due to the consumption of diet with different content and bioavailability of micronutrients and stage of life, economic status, place of residence within a country etc.

Sheela, K. and Shashikala, P. (2001) observed that the longest time spend by women was related to food preparation activities. Time spend by mothers on preparation of food for family meals is reported to decrease with their employment outside the home. Thus, it may affect the nutritive value and aesthetic quality of meal.

Ene-obong *et al.* (2001) done a study to determine the effects of socio-economic and cultural factors on the health and nutritional status of women of child bearing age. The women were engaged in farming, trading and teaching. They found that better educated women had higher incomes than those with little or no education. The teachers had significantly better health status, health and nutrition knowledge, food habits and reported significant positive correlation of

income with all nutritional variables except vitamin C, age at marriage and nutrition knowledge.

Anuradha and Khader (2001) stated that women's income has a positive impact not only on the socio-economic status of the families, but also on the food and nutrient intake of the families.

Khetarpaul, N. and Grover, I (2001) told that the most important social, economic and cultural dimensions which effect women's provision of health nutrition are women's employment and women's decision-making power vis-à-vis the disposal of their income including marketing of food purchased or purchasing food in the market, on the one hand and their ability to cook and serve adequate quantities of food to individual household members. It encompasses their nutritional knowledge and 'autonomy' in 'kitchen' decision, on the other. They reported that women from landless marginal and small land holdings are more hard pressed. The physical labour involved may be so heavy that it is detrimental to the women's health especially during pregnancy and lactation.

Sethi, R. and Pant, S. (2001) stated that food consumption among women is affected by the availability of agri-commodities, income, family composition, habit and tradition.

Khaw *et al.* (2001) reported that malnutrition prevents much of the world's population from reaching their full potential-mentally, physically or financially. It also contributes to higher death rates from heart disease, stroke and cancer.

Rao and Rahman (2001) found that the intake of cereals and millets decreased significantly with the increase of income and level of education. The qualitative foods such as pulses and legumes, roots and tubers, fruits, fish and other seas foods, meat and poultry products, other vegetables, nuts and oilseeds,

fats and edible oils and sugar increased significantly with the increase of income and educational status.

Sheela, K. and Shashikala, P. (2001) told that women's employment has the potential to benefit the household nutrition through increasing income. It is an accepted fact that in household with low average food availability, women and children are especially at risk.

Robeyns (2001) identifies the various ways in which women's paid work may expand the vectors of functioning available to them. It may lead to a) psychological functionings like increased self-esteem, b) social functionings like having a social network, c) financial functionings like being financially independent, and so on. The capability approach, thus, seems to accord due significance to women's paid work for enhancing their well-being.

Ene-obong *et al.* (2001) said that the nutritional and health status of women is of great concern in the contemporary world, because the multiple roles played by women give rise to serious health and nutritional problem. The situation is even worse in countries where societal norms and sex discrimination have forcefully subjected women to satisfy the health and nutritional needs of their families at their own expense. Women are thus vulnerable to malnutrition for social and biological reasons.

Sachdev *et al.* (2001) found in a study that anaemia was highly prevalent among women and its deficiency symptoms like pale conjunctiva, paleness of skin and fatigue was evident. The incidence of cold and cough, and joint pain occurred more frequently in working group, whereas occasional incidence of backache, indigestion and hypertension was observed in working group. He observed that health, morbidity and haemopoetic status of mothers of non-working group was better as compared to working group. This could be due to

more stress, strain, tension and over exposure to dust and weather among the subjects of working group.

Khetarpaul, N. and Grover, I. (2001) said that the necessity for many women to plot a dual role in the household in-production (food production and income generation) and in-reproduction (activities related to nurturing and attending to basic needs) imposed immense pressure on women.

Rao (2001) stated that the Indian population is passing through a transition phase where subsistence conditions are being replaced by plentiful food but reduced physical work and therefore, an understanding of the changing nutritional scene is critical.

Bavasvapoornima (2001) observed that working women have higher levels of nutrition knowledge than the non-working women though the education status of both the groups were same.

Shobha Rao (2001) reported that VAD, which can cause growth retardation and impaired vision, remains a significant public health issue among populations that do not consume enough vitamin A, severe VAD causes blindness, less severe VAD impairs the immune system, making people more susceptible to infection and putting them at increased risk of death. Concurrent infection with parasites and iilnesses such as diarrhoea, as well as having several pregnancies too close together, can exacerbate VAD.

Shukla *et al.* (2002) reported that for social and biological reasons, women of reproductive age are amongst the most vulnerable to malnutrition. Many factors have been associated with both forms of malnutrition of women. These include the socio-economic (e.g. occupation, educational background and the standard of living), cultural (e.g. religion and casts), the demographic (e.g. age and marital status) and dietary characteristics.

Allen and Gillespie (2002) reported that illnesses associated with nutrient deficiencies have significantly reduced the productivity of women in less developed countries. It is difficult to determine exactly what proportion of those losses are due to maternal malnutrition, but recent research indicates that 60 per cent of deaths of children under age 5 are associated with malnutrition and children's malnutrition is strongly correlated with mother's poor nutritional status.

Gopalan *et al.* (2002) said that diets of the poor income groups are deficient in several nutrients namely energy, vitamin A, calcium, riboflavin and iron.

WHO (2002) reported that iron deficiency anaemia is more prevalent in women than in men. Iron deficient women have a higher mortality risk during childbirth and an increased incidence of low-birth-weight babies.

Nussbaum (2002) reported that women who can seek employment outside the home have more resources in protecting their bodily integrity from assaults within it.

Shetty, P.S. (2002) observed that the poorer household allocate more than 70 per cent of the household income on food alone; yet the nutritional needs are largely unmet and many of these poor continue to starve.

Majid, E. (2002) said that failing to meet the body's iodine requirements impairs mental functioning and can cause goiter and hypothyroidism, a condition marked by fatigue and weakness. Although programmes to iodize salt have reduced the prevalence of iodine deficiency disorders dramatically in the past 10 years, there is still wide variation in household occurs to iodized salt.

ACC/SCN and IFPRI (2002) reported that mothers who do not consume enough iodine are more likely to miscarry or have a stillborn child. The physical

growth and mental development of the children who do survive is often severely impaired, and children may suffer irreversible mental retardation.

Chadha and Olouch (2003) reported that vitamin A deficiency and iron deficiency effect women during their reproductive years and children, they hinder both the development of the individual human potential and national, social and economic development.

Memon *et al.* (2003) found that non-working women (housewives) do not take care about their diet from nutrition point of view. They do not know that a good diet is necessary for both mental and physical health, while many of the working women know very well about good diet. During survey they observed that many of the house wives were taking only a cup of tea in the morning instead of breakfast, the reply was that they did not have enough time or they did not like to have the breakfast at all. On the other hand, working females were taking regular breakfast and were taking proper diet than non-working women. Working women being educated, aware of the fact that the balanced diet is necessary both for mental as well as physical health.

Engstron *et al.* (2003) said that height and weight are two of the most commonly used anthropometric measurement in clinical practice and research.

Kennedy *et al.* (2003) reported that nutrient deficiencies usually occur when the habitual diet lacks diversity or is overly dependent on a single staple food, as is the case with monotonous cereal or tuber-based diet. They found that micr5onutrient deficiencies are most prevalent in areas where the diet lacks varieties, as is the case for many individuals in developing countries. The heaviest tall from these deficiencies is borne disproportionately by women and children. They found that iron, vitamin A and iodine deficiencies are the three micronutrient deficiencies of greatest public health significance in developing world.

Elizabeth and Leslie (2004) said that iron deficiency and anaemia are the most prevalent nutritional deficiencies in the world. The body uses iron to produce haemoglobin, a protein that transports oxygen form the lungs to other tissues in the body via the blood stream, and anaemia is defined as having a hemoglobin level below a specific level (less than 12 grams of haemoglobin per deciliter of blood (g/dl) in non-pregnant women, less than 10 g/dl in pregnant women). Most women who develop anaemia in less developed countries are not consuming enough iron-rich foods or are eating foods that inhibit the absorption of iron. However, malaria can also cause anaemia and is responsible for much of the endemic anaemia in some areas. Other causes of anaemia include hookworm and schistosomiasis, HIV/AIDS, other micronutrient deficiencies and genetic disorder.

Okafor *et al.* (2004), done a survey of nutrient intake and workload of pregnant women and found that intake of calcium was the most limiting nutrient and protein, riboflavin, niacin and iron ranked next to calcium.

Crepinsek and Nancy (2004) pointed out that the higher income of families with working mothers should lead to increased food expenditures and a higher quality diet in those dimensions that might be constrained by lack of income. Food security can also be expected to improve.

Jyothilakshmi and Prakash (2004) stated that the educational level, position, health and nutritional status of the women is central to the quality of life and is a key determinant of family health.

Islam *et al.* (2004) said that nutrition is one of the most important factors influencing the quality of human life and nutritional status is an important health indicator to assess a country's health status and morbidity pattern. In developing countries, women mature bearing obvious evidence of deprivation in childhood, namely stunting. Nutritional disorders are very frequent in women and involve a

high risk of morbidity and mortality. So studies on nutritional status are very important in the women of childbearing age because of low to moderate prevalence of possible deficiencies. They reported significant effect of socio-economic status on body weight, height, biceps, triceps, skin fold, body mass index and in dietary intake.

Angela E.V. King (2004) reported that communicable diseases such as tuberculosis, malaria and to a growing extent, HIV and AIDS are diseases of poverty. Poor women are especially vulnerable because of their low nutritional status, restricted access to education and gainful employment and heavy work loads.

Sanjukta Bera (2004) defined nutritional status as the state of the health of an individual and is determined by the intake of nutrients and their utilization. Food consumption is one of the major factors determining nutrition status of any community, which is also influenced by environmental changes. The need for assessment of the nutritional status also identify individual or the community at risk (due to malnutrition) ion a certain region and to provide nutrition aid.

Jyothilaklshmi and Prakash (2004) found in a study that stress, violence, weakness, general aches and pains reduce mother's abilities to carry out energy demanding tasks leading to poor nutritional status. In contrast mother's "happy mood" was associated with a better nutritional status.

Time of India (2005) reported that women tend to ignore the most important aspect of being a working professional and full-time mom, their own daily diet and nutrition which lead to chronic stress and possibly, burnout.

Gangadharappa *et al.* (2005) reported 25 to 46 per cent existence of illness among the women. The illnesses were backache, headache, pain in legs and hands and pain in abdomen. This may be due to considerable workload for

women who spend 8-9 hours at work, continue their work at home also and consume less food.

Khochar and Khetarpal (2006) said that health and nutritional status of an individual depends on the food they eat. The diet must be chosen judiciously to provide all the nutrients needed in adequate amounts and proportion. A normal balanced diet must include daily foods from the various food groups in sufficient amounts to meet the needs of an individual. Food stuffs selected from each group should take into account the income, socio-cultural factors, availability and nutritional requirements. Selection of foods from different food groups also results in variety in the diet, which not only ensures nutritional adequacy but also increases food acceptability. They also reported that higher levels of education appear to be associated with a healthier dietary pattern in relation to chronic diseases. Women with higher education level had lower mean body mass index.

NIH (2006) explained the signs of iron deficiency anaemia as

- feeling tired and weak,
- decreased work and school performance
- slow cognitive and social development during childhood
- difficulty in maintaining body temperature.
- decreased immune function, which increases susceptibility to infection.
- glassitis (as inflamed tongue)

Garcial *et al.* (2007) reported that anthropometric values are closely related to nutrition, genetic makeup, environmental characteristics, social and cultural conditions, lifestyle, functional status and health.

Singh and Agrawal (2007) said that India has been going through a period of fast urbanization, industrialization and westernization for several decades.

Khetarpal and Kochar (2007) conducted a study by selecting 75 women, between the age group of 25-40 years, who were moderate workers. The mean daily intakes of nutrients was calculated and compared with their RDA and found that only 10 per cent of the studied women were consuming a balanced diet. Majority of them were suffering from anaemia and complained of backache, headache and pain in the body.

Sowmya and Puttaraj (2007) done a study to assess the daily intake of micronutrients by the women in the age group of 20-60 years and reported that except for calcium, thiamine, riboflavin and ascorbic acid, all the other nutrients were low compared to recommended dietary intake.



PROFILE OF THE STUDY AREA

Chapter-III

PROFILE OF THE STUDY AREA

Prior to discuss the findings of the study on "A comparative study to assess the nutrient intake among working and non-working women in Lucknow district", it is essential to sketch briefly the salient features.

Origin of the name of the District

The district of Lucknow is named after the city of Lucknow, which is situated almost in the centre of the district. The origin of the name 'Lucknow' is not definitely traceable, and whatever traditions are available, are of extremely doubtful historical authenticity. Lucknow formed a part of the ancient kingdom of Kosal, and there is a tradition that the town was named in honour of Rama's brother, Lakshmana as Lakhanpuri which was corrupted into Lukhnau and later to its present designation of Lucknow. To the north-west of the town there is a mound, which is still called the Lakshmana Tila and lends support to this tradition. The story that the town is named after an ahir or milk-seller named Lakhna, who as a result of the spiritual blessings of a Muslim saint, had become rich and founded the town, is apocryphal and is hardly worthy of any credit. Even the *Ain-i-Akbari,* while dealing with the *Sarkar* of Lucknow as a part of the *Suba* of Avadh, does not throw any light on the origin of the name of Lucknow.

Location, general boundaries, total area and population of the district

The district of Lucknow formed the central part of the province of Avadh and was the headquarters of the *Sarkar* of Lucknow in the *Suba* of Avadh, in the time of Akbar. The district lies between the parallels $26^0 30'$ and $27^0 10'$ north latitude and $80^0 30'$ and $81^0 13'$ east longitude. The district is an irregular quadrilateral with the city and cantonment of Lucknow forming nearly the

centre. It is bounded in the north by the district of Sitapur, on the east by that of Bara Banki, on the south by that of Raebareli and on the north-west and the south-west by the districts of Hardoi and Unnao, respectively. Except in a part in the south and south-west, the boundaries of the district can hardly be called natural, and appear to have been fixed arbitrarily for administrative convenience; the river Sai on the south and south-west forming the natural boundary for a short distance only. Some villages belonging to the Lucknow district still lie across the river Sai to the north of the Lucknow-Kanpur Road, while some villages of district Unnao lies on the Lucknow side of the river Sai. It is understood that there is a proposal under consideration to rectify this anomaly and to transfer to the district of Unnao those villages in pargana Bijnor, which lie south of the river Sai, and to assign to Lucknow those villages of district Unnao, which lies between the river Sai and the present boundary of the district.

Area

The area of the district on the basis of the professional survey by the survey of India, works out to 6,24,896 acres which is equivalent to 976.4 square miles. This is the area mentioned in the latest census report of 2001. The area mentioned in the various records of the Land Revenue Department cannot be relied upon as it appears that they did not take into consideration the area occupied by the city and cantonment of Lucknow, which were not surveyed during the settlement and record operations. The results of the only reliable guide in this matter.

Population

The total population of the district according to the 2001 census was 59,68,795 of which the urban population accountable for 23,20,961 and the female population was 10,91,688 and the male was 12,29,273.

Climate

Observatories

There are two observatories in the district, one at Amausi aerodrome, under the charge of a Meteorological Officer and the other at the Central Drug Research Institute, Chhatar Manzil, under the charge of its Director. In addition to these there are rain-gauge stations in all tahsil headquarters under the charge of the Tahsildar.

Seasons

The district is situated in the sub-tropical region and its climate can be said to be of sub-tropical monsoon type. It avoids the parching drought and the opposite extremes of heat and cold which are experienced in the Punjab. It is said that seasonality is the keynote of Indian climate and the three seasons – the rainy, the cold and the hot – are well marked off. The first commences with fair regularity in the middle of June and continues till the end of September, but as the monsoon from the Bay of Bengal sweeps over the Uttar Pradesh, the commencement of the rainy season may be as early as the beginning of June or as late as the first or second week of July. The cold weather extends from early October to the end of February. March is a transitional month. The third season extends over the remaining months of the year. In this season the sun gradually moves towards the north and consequently the temperature begins to rise, and so it gradually merges into the hot weather with high temperature and dry westerly winds.

Temperature and Humidity

In winter the temperature is controlled by two factors :

(i) the slanting rays of the sun during winter, and

(ii) the development of anti-cyclone conditions in northern India.

The following table shows the mean maximum and mean minimum monthly temperatures with the highest and the lowest temperatures ever recorded in the district –

Month	Mean daily max. temperature in		Mean daily min. temperature in		Highest max. temp. recorded		Lower min. temp. recorded in	
	^{0}F	^{0}C	^{0}F	^{0}C	^{0}F	^{0}C	^{0}F	^{0}C
January	73.9	23.4	47.1	8.4	86.0	30.2	35.0	1.67
February	78.6	25.9	51.4	10.8	95.0	35.0	35.0	1.67
March	90.8	32.7	60.6	15.9	106.0	41.2	45.0	7.22
April	101.4	38.8	70.8	21.6	114.0	45.6	55.0	12.75
May	105.4	40.8	78.3	25.8	117.0	47.2	64.0	17.8
June	100.2	39.0	81.7	27.7	119.0	48.9	67.0	13.9
July	92.4	33.5	79.5	26.4	114.0	45.6	72.0	22.2
August	90.5	32.6	78.6	25.9	102.0	39.0	72.0	22.2
September	91.9	33.4	76.5	24.8	103.0	39.2	64.0	17.8
October	91.4	33.1	66.5	19.2	104.0	40.0	52.0	11.1
November	83.9	28.9	54.1	12.3	94.0	34.5	42.0	5.55
December	75.9	24.4	47.3	8.5	92.0	33.2	35.0	1.57
Annual Average	89.7	32.2	66.0	19.2	119.0	48.5	35.0	1.67

Communication facilities

Of the early history of the district of Lucknow not much is known with a degree of authenticity. It was only during the mediaeval period that Lucknow acquired an importance, being the capital of the Lucknow *Sarkar* in the time of Akbar, and later, as the capital of the *Suba* of Avadh. The city of Lucknow is situated on the banks of the Gomati, on the direct trade routes across the Ganga and from the western part of Avadh to districts across the Gomati and the Ghagra, right up to the foothills of the Nepal tarai. It was on the direct route form the eastern districts of U.P. from Jaunpur to Delhi. It must, however, be stressed that the conception of roads then was not the same as now. The roads were well marked but hardly made *pakka* to say nothing of the modern developments. They could, therefore, be considered to be fair-weather roads, suitable for wheeled traffic, horses and men. There was no fast traffic in those

days, and journeys were performed usually by short stages. The records of the administration of Avadh under the Nawabs were destroyed during the struggle of 1857, and the reports of the British authorities after 1857 are the only available records.

Road transport

The usual conveyance used appears to have been the palanquins, carried on the shoulders of the men, and carriages drawn either by horses or by bullocks, horses and elephants were the favourite modes of transport for men, but with the improvement in the roads the conveyances also changed. The one-horse ekkas and tangas were the usual means of transport for the middle class and the cultivators both for passenger traffic as well as for carriage of goods from and to the bazaars. The bullock carts still continue to bring the cultivators' produce to the market, but for purposes of trade, the railway and the motor-trucks have supplanted all slow-moving traffic. They are both fast and cheap. The rich men of the city used to keep horse carriages, or open landaus and the sprightly little gigs for going about in the city. For the middle class and the poor, the horse-tongas and the ekkas had a suffice. The stately landaus have more or less vanished and few people keep horses or can afford to do so. The rich merchants, big zamindars, high officials and successful professional men all use motor-cars. The middle class persons, employees of Government and other offices and the tradesmen use bicycles. The motor scooter has also made its appearance on the roads of Lucknow city but they are still very few. Persons, who do not own any transport of their own, depend on the Government city bus service or the cycle rickshaw of which there seem to be very many. Small tradesmen, barbers, washermen, milkmen and others depend entirely on the bicycle for completing their daily round.

National and State Highways

The total mileage of national and provincial highways passing through the district is 125 miles 2 furlongs and 509 feet. This also includes those portions of national highways which pass through the Municipal area and are maintained by the P.W.D. The expenses for the maintenance of the national highways are made from the grants of the Central Government whereas the State Government provides funds for the provincial roads. A part of the national highways is constructed of cement concrete while the rest is made of tar macadam. The average width of the provincial highways is 12' and that of national highways is 22'. On all these roads, roadside avenues provide shade for travelers, and are now being looked after by the Forest Department. The following is the list of provincial and national highways of the district :

National Highways

1. Lucknow – Jhansi Road
2. Lucknow – Gorakhpur Road
3. Lucknow – Bareilly road

Provincial Highways

1. Lucknow – Varanasi Road
2. Lucknow – Sultanpur Road
3. Lucknow – Hardoi Road
4. Beni – Harauni – Tirwa Road
5. Machchhi Bhavan Bye – pass Road
6. Sitapur City Branch Road
7. Kaiser Bagh Road
8. University Road

LUCKNOW

Scale 1:35,000 1 Cm = 0.35 Kms.

LEGEND

- Airlines
- Airport
- Banks
- Bus Stand
- Business Organisations
- Cinemas
- Educational Institutions & Universities
- Government Offices
- Hospitals
- Hotels & Accommodations
- Important Buildings
- Membership Institutions
- Places of Interest
- Railway Stations
- Places of Worship
 - Temple
 - Church
 - Mosque
 - Gurudwara

Selected Wards





Jankipuram

Aliganj

Indira Nagar

Husainabad

Bataganj

Gomti Nagar

Alam Nagar

Sarojani Nagar







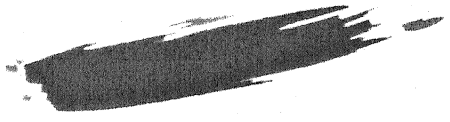
9. River Bank Road
10. Husainabad Trust Road
11. K.K. College Road
12. Bakshi-ka-Talab-Asthi Border Road
13. Lady Milles Road (Road at the back of Ministers' Residence Nos. 1 – 5 on Cassels Road)
14. Cantonment Branch Road.

Selection of area

Lucknow district is divided into 6 zones. Out of which 4 zones were selected randomly. Each zone is further divided into different wards. From each selected zone, two wards were selected randomly, for selection of area. Thus total 8 wards namely Indira Nagar, Gomti Nagar, Balaganj, Husainabad, Alam Nagar, Sarojani Nagar, Jankipuram and Aliganj were slected. From each zone 25 working women and 25 non-working women were selected purposively. Thus total 50 respondents were selected from each selected zone. The total respondents selected were 200, out of which 100 were working women and rest 100 were non-working women.



METHODOLOGY



Chapter-IV

RESEARCH METHODOLOGY

This chapter deals with the research procedures applied in conducting the present study. For convenience, the research methodology has been discussed under the following three sub-heads :-

1. Research design
2. Variables and their Operationalization
3. Data gathering procedure and statistical techniques used

1. Research design

It comprises of the following sub-parts

(i) Locale of the study

(ii) District under study

(iii) Selection of area

(iv) Selection of respondents

(v) Pilot study

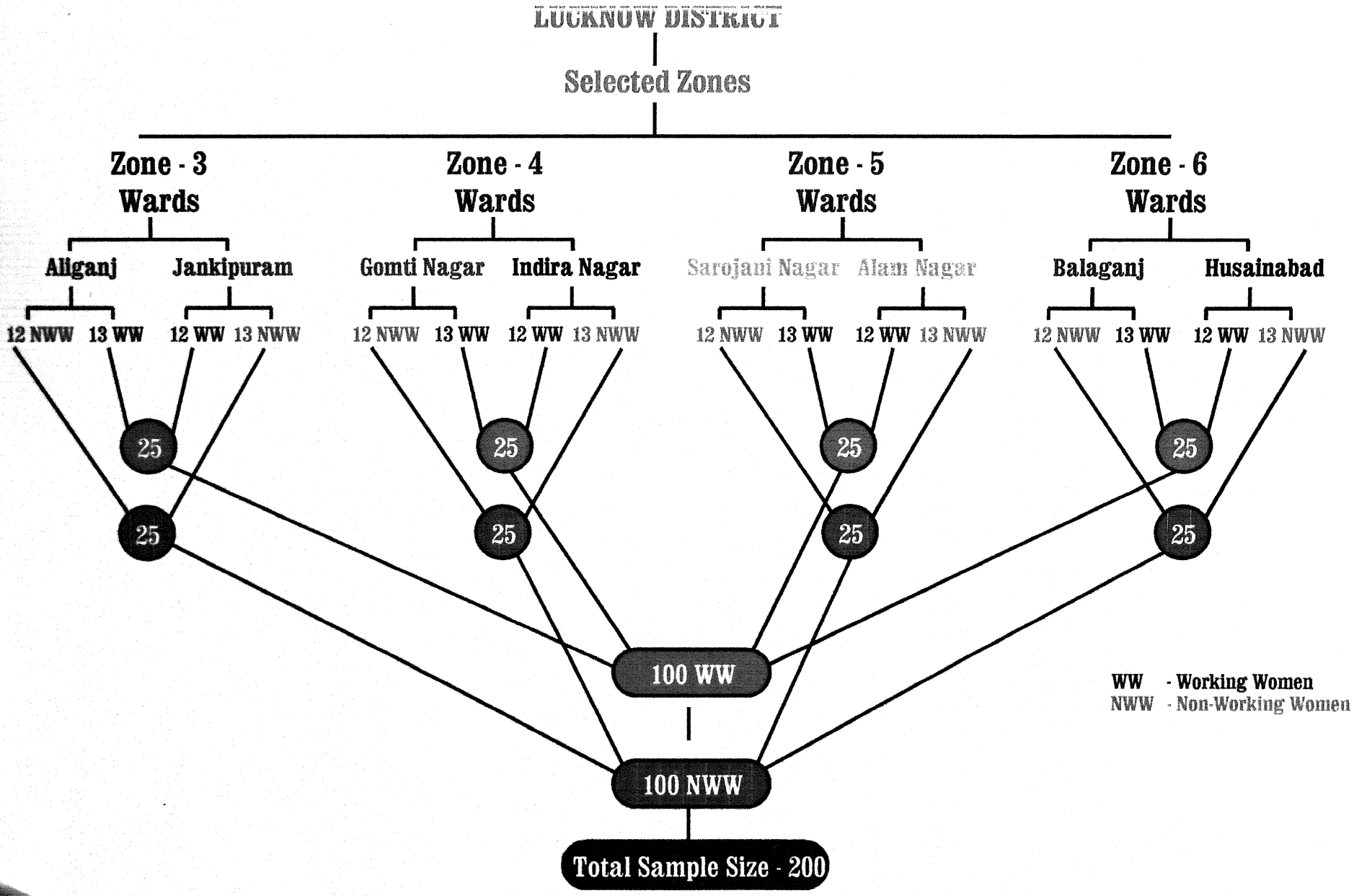
(vi) Pre-testing of instruments

(vii) Tools and data collection

(viii) Statistic analysis of data

(i) Locale of the study

Uttar Pradesh was chosen as locale of the study. This was done with the intension that U.P. is a major state of the country and women have an important role to play in the development of the state as well as the country.


LUCKNOW DISTRICT
Selected Zones
Zone - 3 Wards
Zone - 4 Wards
Zone - 5 Wards
Zone - 6 Wards
Aliganj
Jankipuram
Gomti Nagar
Indira Nagar
Sarojani Nagar
Alam Nagar
Balaganj
Husainabad
12 NWW
13 WW
12 WW
13 NWW
25
100 WW
100 NWW
Total Sample Size - 200
WW - Working Women
NWW - Non-Working Women

(ii) District under study

District Lucknow was purposively selected for this study as the researcher hailed from this place. This helped the investigator to collect the necessary information accurately and timely. The researcher, being from the same place could easily have dialogues and discussions with both during pilot study and final data collection.

(iii) Selection of area

Lucknow district is divided into six zones. Out of which, four zones were randomly selected, from each zone two wards were selected randomly for the study area.

(iv) Selection of respondents

To conduct the study a sample size of 200 was taken, in which 100 of the respondents were working women and rest 100 were housewives termed as non-working women. Most of the working women selected belong to the service class like teaching, clerk, supervisor and nurse, some belong to labour class like mate in hospitals and few were doing work as labour on wages. The sample was taken purposively for both groups that is working group and non-working group. Only those women were selected who were agreed for interview and responded positively.

(v) Pilot study

Prior to finally deciding the title of the project a pilot survey of the area was conducted. This gave an idea about the place of the study and nature of the samples that could be drawn and type of aspects and problems, which could be explored out.

(vi) Pre-testing of instruments

Before collecting the necessary data from the finally selected sample of 200 women, 20 women were identified other than those included in the final sample of respondents. These 20 women were interviewed with the help of schedules and questionnaires developed for collecting the data. This helped the investigator in making necessary changes in the instruments to be finally used their wording and composition.

(vii) Variables and their measurements

(i) Independent variables

(a) Age :

The chronological age of women at the time of investigation was taken. All women were listed according to following age groups and given the scores as follows.

Age-group (years)	Score assigned
(a) 25 – 30	1
(b) 30 – 35	2
(c) 35 – 40	3

(b) Educational qualification

Education was operationalized as the number of years of formal education obtained by the respondents. Scores assigned to different categories on the basis of modified Kulshrestha's socio-economic status (SES) scale for rural was as follows :

Educational qualification	Score assigned
Illiterate	1
Primary	2
Middle	3
High school	4
Intermediate	5
Graduate & above	6

(c) Caste

Caste of the respondents in the study was measured on the basis of response of individual women to which they belong, i.e. in terms of upper caste, backward caste and schedule caste/schedule tribe. The scores were assigned as -

Caste	Score assigned
Upper caste (General)	1
Other backward caste (OBC)	2
Schedule caste/Scheduled tribe (SC/ST)	3

(d) Religion

The selected study area was having mostly Hindu religion and some are Muslim. The following scoring pattern was adopted

Category	Score assigned
Hindu	1
Muslim	2
Sikh	3
Christian	4

(e) Type of family

Family type was divided into two major categories viz. nuclear and joint. Nuclear type was referred to the family composing of parents and their children only, while joint family referred to the family composing of more than one couple and their children including other persons related to them. The scoring procedure adopted was taken from the modified socio-economic status scale for rural of Kulshresta.

According of family type	Score assigned
Nuclear family	1
Joint family	2

(f) Family size

Family composition was scored on the basis of family members.

Family size	Score assigned
Up to 5 members	1
6 and more	2

(g) Total income of the family

Total income of the family was calculated by recording the amount of money earned by the women and her husband from all sources. The recorded total income per month was divided into four categories on the basis of modified Kulshrestha's socio-economic scale for rural (1972) as given below

Income group	Score assigned
Up to Rs. 10,000	1
Rs. 10,000 to 20,000	2
Rs. 20,000 to 30,000	3
Rs. 30,000 and above	4

(h) Material possession

Material possession of the respondent was measured by giving a list of items and scored as -

Material possession	Score assigned
Up to 5 items	1
6 to 10 items	2
11 and more items	3

(ii) Dependent variables

(a) Anthropometrics measurement

Anthropometric measurement is concerned with the measurement of variation of physical dimension and the gross composition of human body at different age

levels and degree of nutrition. All the subjects were measured for weight, height and BMI was then calculated.

(a.1) Height

Height was measured with the help of measuring rod having least count of 0.1 cm. The rod was made to stand straight on a leveled ground. The subject was asked to remove foot wear and head wear and to stand erect, near the rod with heals buttocks, shoulders blades and head in a vertical plane touching anthropometric rod. The pin was kept parallel to ground. The height was recorded in centimeter.

(a.2) Weight

A weighing machine was used to weight the subject in kg with least count of 0.5 kg. Weighing balance was placed on leveled ground and adjusted to zero before measurement. The subject was made to stand erect without touching anything on the weighing balance with minimum clothing and weight was recorded in kilogram.

(a.3) BMI

The continuous BMI variable was categorized into low, middle and high categories, as under weight and overweight status offer risk of different public health problems. The BMI was calculated by dividing the weight of a person (kg) by the square of person's height (meter)

$$\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height}^2 \text{ (m)}}$$

Clinical survey

All the subjects were visually examined for the various deficiency disorder in the clinical examination. The method is based on examination for changes believed to be related to inadequate nutrition that can be seen as felt in superficial epithetical tissues especially skin, eyes, hair. Clinical examination consist of routine medical history and physical examination. In order to find nutritional adequacy clinical examination was done. Eyes were examined for pale conjunctiva, bitot spot,

xeropthalamia. Hair was examined for normal, hair loss and loss of colour (whiteness). Teeth were examined for normal, caries or tooth loss. Skin was examined for normal, dry loss of luster and wrinkles.

Morbidity pattern

Morbidity pattern was noted to assess the incidence of disease in last one year. For this the complaint of women for headache, cold & cough, backache, joint pain and other severe problems like blood pressure, diabetes etc. was noted down on occasional or frequently basis.

Dietary pattern

The strong symbolic and cultural influence and emotional reasons for food choices are broad concepts create a particular food habits of an individual or a community. The diets they consumed in a day is reflected in the food choices which is known as dietary pattern.

Nutrient intake

The proper design for a adequate diet is a variety and amount of different food, sufficient to provide each day and requirement of nutrient. Nutrient intake may be considered under two general headings.

(i) the nutritionally adequate or balanced diet which maintains and promotes health and vigour.

(ii) Special diet prescribed for treatment or prevention of disease state.

Micronutrients

The organic substances presents in small amount in several food stuffs. They have important functions in many of the vital processes of life thus refer, essential for health and well being and needed only in small amounts, such organic substances are known as 'micronutrients' such as vitamins, minerals and fibers.

Dietary surveys

A structured interview schedule was developed and pre-tested before use. Data were collected by paying personal visits to the respondents. Information regarding food consumption habit, dietary intake, nutritional intake etc. were obtained. For this purpose 24 hours recall method was used in the sense that respondents were advised to provide information on the consumption of various food items of the adolescent girls of the day prior to the day of survey. Dietary recall data was not collected after the day of any occasion or fasting. Showing them standard cups, catories, spoons, glass made the standardization and then they were asked that how many cups or catories of the food they have consumed. In this context the data on the amount of various food items were obtained which were later on converted into the form of raw material. It is to be mention here that it is quite difficult to measure the consumption of various food items very accurately because the respondents themselves were not having any accurate records and the information provided by them may be considered only as approximate one.

To calculate the nutrients like energy, protein and fat are used comprehensive Food Exchange List, the amount of food in household measures was converted into metric weight and the nutrient intake was calculated by using the table from the "Nutritive value of Indian Foods' by C. Gopalan and compared with their respective Recommended Dietary Allowances (ICMR). Individual food intake of raw food stuffs was calculated by following formula.

$$\text{Individual intake of raw food stuff used in food preparation} = \frac{\text{Total raw quantity of food stuff used for preparation} \times \text{Individual intake of cooked amount of that preparation}}{\text{Total cooked amount of food preparation}}$$

Knowledge and awareness

Knowledge for the purpose of the study referred to the amount of correct information possessed by respondents regarding various aspects of health and nutrition.

Awareness is variously defined, in this study it is a measure of target women who were aware about their health and nutrient intake. It comprises a human's perception and cognitive reaction to a condition or event. Awareness does not necessarily imply understanding, it is just an ability to be conscious of, feel or perceive.

Food habits

A pattern of food eaten called food habit. A number of factor influences the food habits these include, educational and economic level of community, availability and cost of foods and social and cultural practices.

Nutrition

The study of foods, diets and food-related behaviours, and how nutrients are used in the body. People also use the term to describe the food intake of a person.

Vitamin A deficiency disorders (VADD)

All the physiological disturbances caused by lack of vitamin A, including clinical signs and symptoms are termed as VADD.

Balanced diet

A diet that provides an adequate amount and variety of foods to cover a person's energy and nutrient need is called as balanced diet.

Iron Deficiency Anaemia

A condition in a person who has a low haemoglobin or haemotocrit level. Iron deficiency is the commonest cause. Lack of folate, vitamin B_{12}, iron and protein.

Besides this, additional non-nutritional causes like Malaria, hookworm infection, other infections (such as HIV/AIDS), heavy bleeding and sickle-cell disease are also cause of anaemia.

A low level of iron in the blood and other tissues that keeps the body from working properly. It occurs when a person has used up the body's iron stores, and absorbs too little iron from food to cover needs.

Nutrient

Part of the food that is absorbed and used by the body for energy, growth and repair, and protection from disease.

Construction of interview schedule

The schedule for the present investigation was thus developed in accordance with the methodological procedure described above, keeping in view the objectives of the investigation.

Data collection

The necessary evidences were collected in line with the objectives of the study. All the 200 women respondents were inclusively approaches by the researcher. By personal contact, all the respondents were interviewed with the help of the structured schedule developed for the study.

Period of investigation

The data collection was initiated from January 2006 to December 2006.

Hypotheses

Ho : There is no correlation between nutritional status of working and non-working women.

Ho : There is no significant difference between nutrient intake of working and non-working women.

Statistical analysis

Statistical analyses are procedures used in finding out the numerical value of the whole study. The statistical techniques for data analysis used in the study are as follows :

1. Percentage
2. 'Z' test
3. Chi-square test
4. Correlation coefficient
5. Arithmetic mean
6. Standard deviation

1. Percentage

Single comparisons were made on the basis of the percentage, for drawing percentages, the frequency of a particular cell was multiplied by 100 and divided by total number of respondents in that particular category to which they belonged.

$$\text{Percentage} = \frac{\text{The sum of all the responses}}{\text{Total number of all the responses}} \times 100$$

2. Deficit/Increase per cent

Deficit per cent – If calculated value of nutrient intake is less than RDA. It will be defined as deficit per cent.

Increase per cent – If calculated value of nutrient intake is more than RDA, it will be defined as increase per cent.

It can be calculated by using following formula

$$\text{Deficit/increase per cent} = \frac{\text{Nutrient intake - RDA}}{\text{RDA}} \times 100$$

Where RDA is Recommended Dietary Allowances

3. 'Z' test

It was applied to test the difference between two sample means and when the observations in two set are independent. Following formula is used :

$$Z = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

where,

$\bar{X}_1$ = Mean of first sample
$\bar{X}_1$ = Mean of second sample
S_1 = Standard deviation of first sample
S_2 = Standard deviation of second sample
n_1 = Number of respondent (in first sample)
n_2 = Number of respondent (in second sample)

4. Chi-square test

In order to test the independence of two attributes a Chi-square test was applied as -

$$\chi^2 = \sum_{i=1}^{n} \frac{(o_i - E_i)^2}{E_i}$$

Where,

o_i = Observed frequency of i^{th} cell
E_i = Expected frequency of i^{th} cell

In rxc contingency table, χ^2 value is compared at (r-1)x(c-1) degree of freedom with theoretical value of χ^2 at 5 per cent level of significance.

5. Correlation coefficient

Karl Pearson has given a coefficient of correlation for the measurement of linear relationship, which exists between two variables. If X and Y are two variables and if $E(X,Y) \neq 0$ then correlation coefficient (r) is

$$r = \frac{\text{Cov. (X, Y)}}{\sqrt{\text{Var. (X). Var. (Y)}}}$$

or

$$= \frac{\Sigma x y}{\sqrt{\Sigma x^2 . \Sigma y^2}}$$

where,

$$\Sigma xy = \left[\Sigma XY - \frac{\Sigma X \Sigma Y}{n} \right]$$

$$\Sigma x^2 = \left[\Sigma X^2 - \frac{(\Sigma X)^2}{n} \right]$$

$$\Sigma y^2 = \left[\Sigma Y^2 - \frac{(\Sigma Y)^2}{n} \right]$$

and n = Sample size

Here, one variable is dependent on other. For testing the significance of correlation coefficient (r), t test is applied. Degree of lack of relationship or coefficient of alienation is measured as –

$$K = \sqrt{1 - r^2}$$

6. Arithmetic mean

Arithmetic mean is the average used in the present study symbolically,

(i) For ungrouped data

$$\overline{X} = \frac{\Sigma X_i}{N}$$

(ii) For grouped data

$$\overline{X} = \frac{\Sigma f_i X_i}{\Sigma f_i}$$

where,

X = Arithmetic mean

X_I = i^{th} variable
f_i = i^{th} frequency
$\sum f_i$ = Total frequency

7. Standard deviation (S.D.)

It is defined as the square root of the means of the squares of the deviations taken from arithmetic mean –

(i) For ungrouped data – S.D. = $\sqrt{1/n \sum (\sum X_i - \overline{X})^2}$

(ii) For grouped data – S.D. = $\sqrt{1/n \sum f_i - (X_i - \overline{X})^2}$



FINDINGS AND DISCUSSION



Chapter-V

FINDINGS AND DISCUSSION

The empirical results and its discussion have been presented in this chapter. For the purpose of convenience, the presentation has been sub-divided under the following heads :

I. Socio-economic status of working and non-working women.

II. Nutritional status of working and non-working women.

III. Dietary pattern and nutrient intake of women.

IV. Develop low cost recipes for the respondent including time and money.

V. Develop the nutrition package for awareness purpose among working and non-working women.

I. Socio-economic status of working and non-working women

Age

Table 5.1 Distribution of respondents on the basis of age group

Age group (years)	Working women	Non-working women	Total
25 – 30	18 (18.0)	36 (36.0)	54 (27.0)
30 – 35	35 (35.0)	46 (46.0)	81 (40.5)
35 – 40	47 (47.0)	18 (18.0)	65 (32.5)
Total	100 (100.0)	100 (100.0)	200 (100.0)
χ^2	20.432*	P < 0.05	

(Figures in parenthesis indicate percentage of respective values)

Table 5.1 reveals the distribution of respondents on the basis of age group, 47.0 per cent working women were belonged to 35 to 40 years age group followed by 35.0 per cent 30 to 35 years age group. 46.0 per cent non-working women respondents were belonged to 30 – 35 years age group followed by 36.0

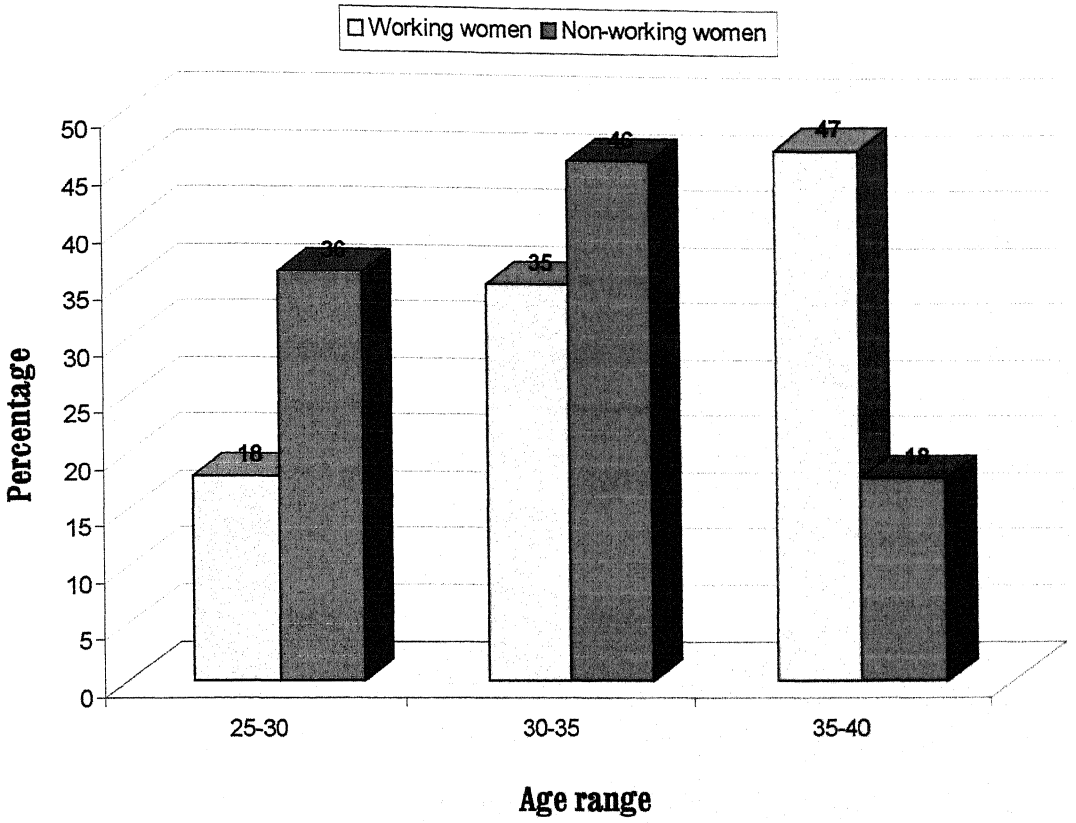


Fig. 5.1: Distribution of respondents on the basis of age group

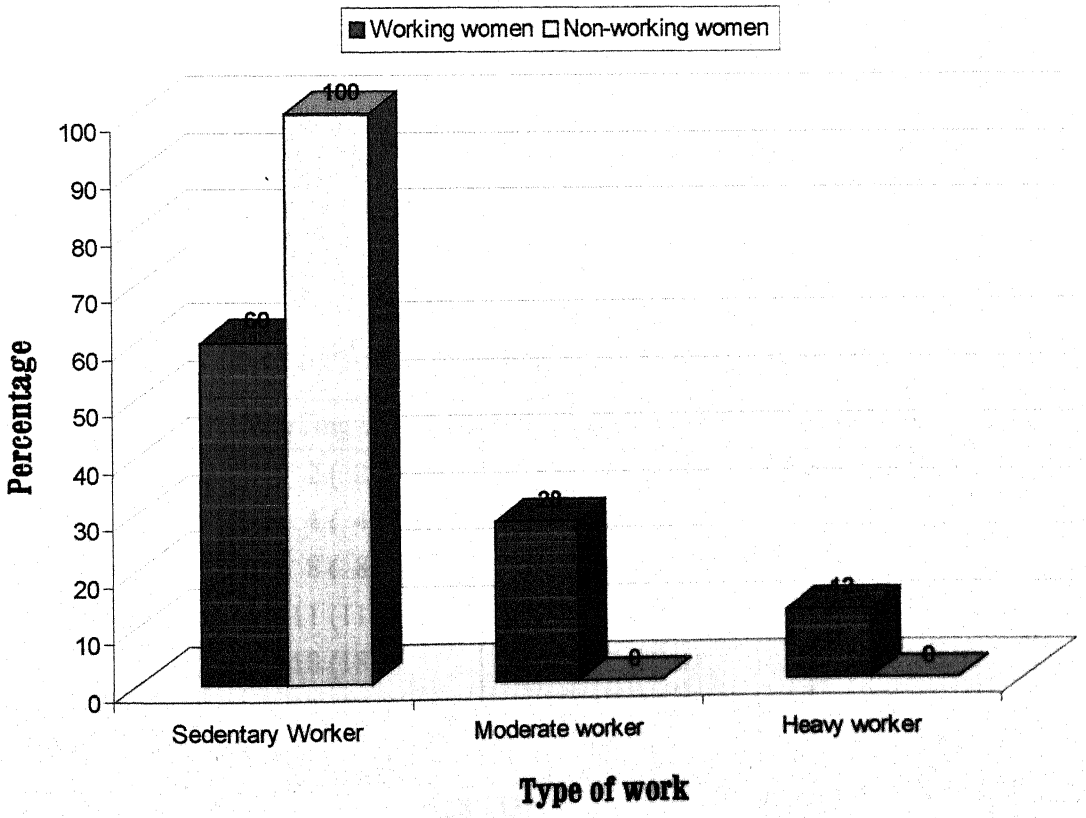


Fig. 5.2: Distribution of respondents as per type of work

per cent in 25 to 30 years age group. Age group of the women respondents plays an important role in working and non-working condition. The observed value of χ^2 (20.432*) was significant at 5.0 per cent level of significance.

Categorization of women according to their work

Table 5.2 Distribution of respondents as per type of work

Type of workers	Working women	Non-working women	Total
Sedentary worker	60 (60.0)	100 (100.0)	160 (80.0)
Moderate worker	28 (28.0)	-	28 (14.0)
Heavy worker	12 (12.0)	-	12 (6.0)
Total	100 (100.0)	100 (100.0)	200 (100.0)
χ^2	29.848**	P < 0.01	

(Figures in parenthesis indicate percentage of respective values)

The perusal of Table 5.2 reveals the distribution of respondents as per type of work, 60.0 per cent working women respondents were sedentary worker, 28.0 per cent were moderate worker and 12.0 per cent were heavy worker. All the non-working women respondents were categorized as sedentary worker.

The observed value of χ^2 (29.848**) was significant at 1.0 per cent level of significance. The society's expectations from working women at the domestic front remain the same as those from a non-working women.

Education

Table 5.3. Distribution of respondents on the basis of education

Education	Working women	Non-working women	Total
Illiterate	2 (2.0)	6 (6.0)	8 (4.0)
Primary	4 (4.0)	8 (8.0)	12 (6.0)
Middle	8 (8.0)	14 (14.0)	22 (11.0)
High school	11 (11.0)	28 (28.0)	39 (19.5)
Intermediate	18 (18.0)	22 (22.0)	40 (20.0)
Graduate & above	57 (57.0)	22 (22.0)	79 (39.5)
Total	100 (100.0)	100 (100.0)	200 (100.0)
χ^2	28.153*	P < 0.05	



Fig. 5.3: Distribution of respondents on the basis of education

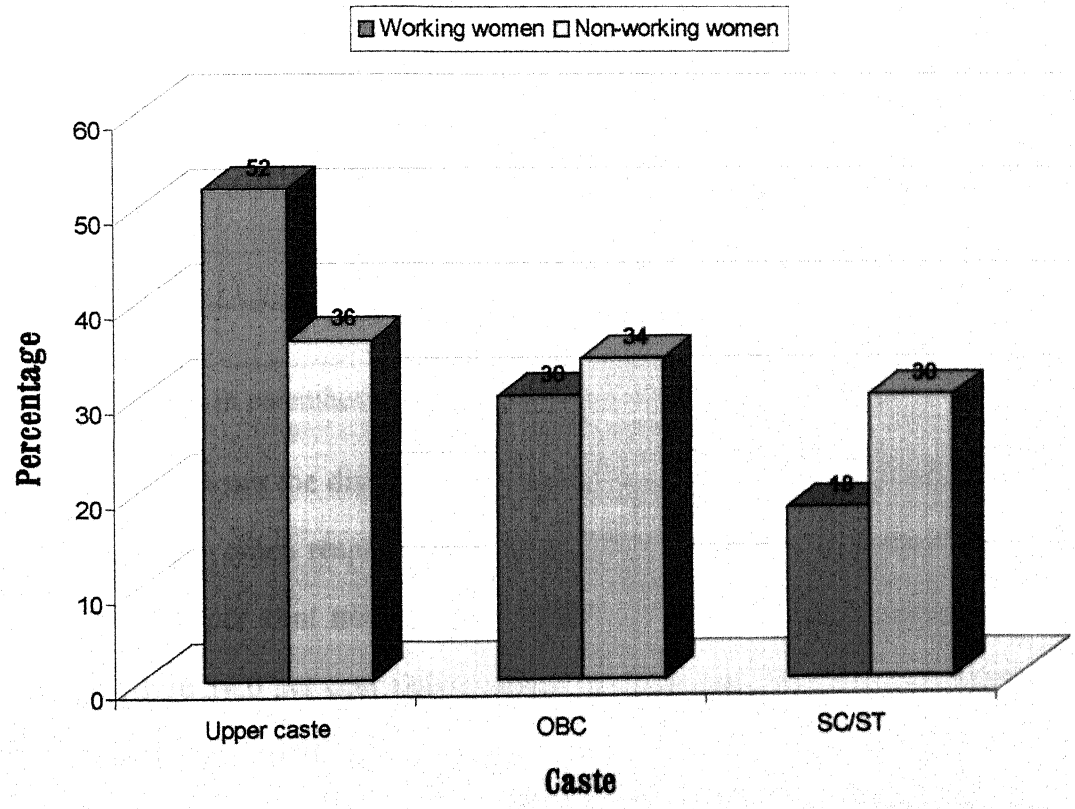


Fig. 5.4: Distribution of respondents on the basis of caste

Table 5.3 reveals the distribution of women respondents on the basis of educational status recorded by the interview method and found that 57.0 per cent working women respondents have passed graduates & above, whereas 18.0 per cent have passed intermediate. 22.0 per cent non-working women respondents have passed graduate whereas 22.0 per cent have passed intermediate. 28.0 per cent non-working women respondents have passed high school whereas 14.0 per cent have passed middle class. Education of women especially the nutrition and health related education should be major thrust area. Working women were observed to have higher level of nutrition knowledge than the non-working women though the education status of both the groups was same (Bavasvapoornima, 2001). Education of women is the key factor in achieving better nutrition by determining household food acquisition patterns.

Caste

Table 5.4 Distribution of respondents on the basis of caste

Caste	Working women	Non-working women	Total
Upper caste	52 (52.0)	36 (36.0)	88 (44.0)
O.B.C.	30 (30.0)	34 (34.0)	64 (32.0)
S.C./S.T.	18 (18.0)	30 (30.0)	48 (24.0)
Total	100 (100.0)	100 (100.0)	200 (100.0)
χ^2	6.159* P < 0.05		

(Figures in parenthesis indicate percentage of respective values)

Table 5.4 shows the distribution of respondents on the basis of caste. 52.0 per cent working women respondents belonged to upper caste whereas 30.0 per cent O.B.C. 36.0 per cent non-working women respondents were belonged to upper caste while 34.0 per cent O.B.C. class. 30.0 per cent non-working women respondents belonged to SC/ST. Now-a-days many women are moving out form their home in doing a job and money capacity builds status of women not only in

her home but also in the society. Women became the critical actors in the process of moving their families out of poverty.

Religion

Table 5.5 Distribution of respondents according to religion

Religion	Working women	Non-working women
Hindu	81 (81.0)	70 (70.0)
Muslim	6 (6.0)	20 (20.0)
Christian	8 (8.0)	2 (2.0)
Sikh	5 (5.0)	8 (8.0)
χ^2	8.731* P < 0.05	

(Figures in parenthesis indicate percentage of respective values)

Table 5.5 shows that 81.0 per cent working women respondents belonged to Hindu family and 8.0 per cent Christian women were in working condition. 70.0 per cent non-working women respondents belonged to Hindu family and 20.0 per cent from Muslim family. 8.0 per cent non-working women respondents belonged to Sikh religion. Nutritional status depends over the religion because diet and variety of meals are change to different religion category. The observed value of χ^2 (8.731*) was significant at 5.0 per cent level of significance.

Type of family

Table 5.6 Distribution of respondents according to type of family

Family type	Working women	Non-working women	Total
Nuclear	65 (65.0)	72 (72.0)	137 (68.5)
Joint	35 (35.0)	28 (28.0)	63 (31.5)
Total	100 (100.0)	100 (100.0)	200 (100.0)
χ^2	1.135 P > 0.05		

(Figures in parenthesis indicate percentage of respective values)

The conducted study showed that 65.0 per cent respondents belonged to nuclear family and 35.0 per cent to joint family system in the working group

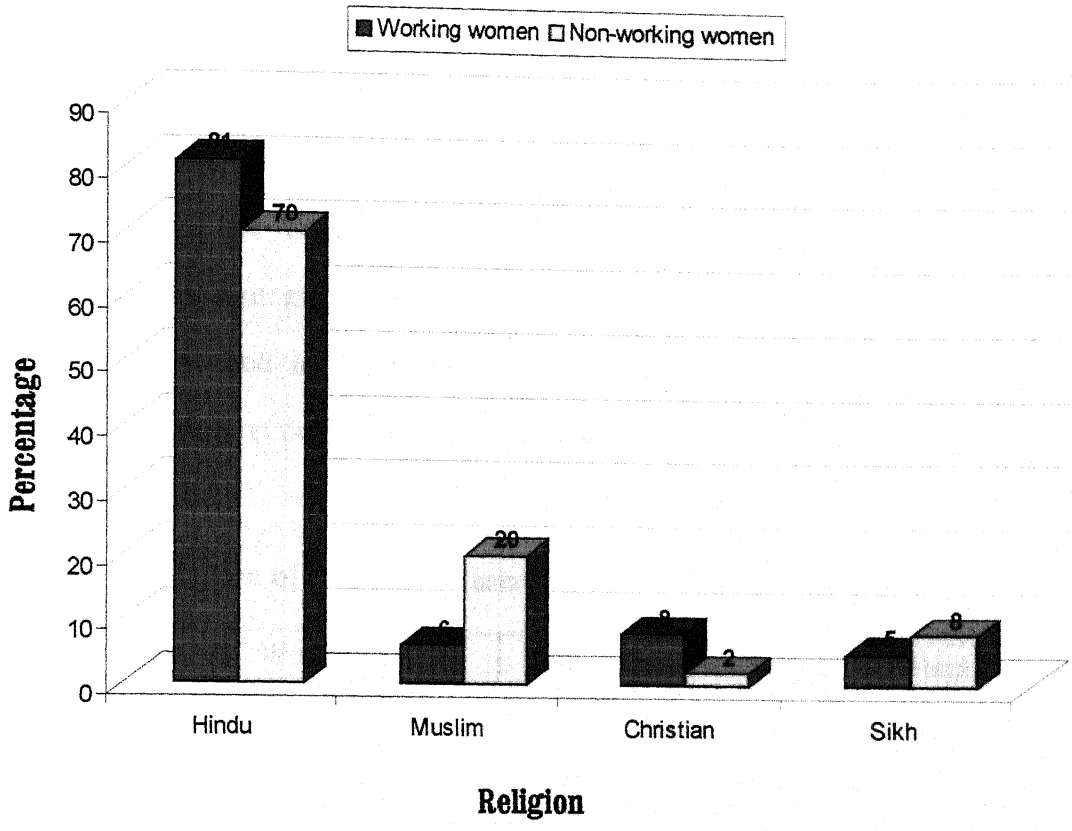


Fig. 5.5: Distribution of respondents according to religion

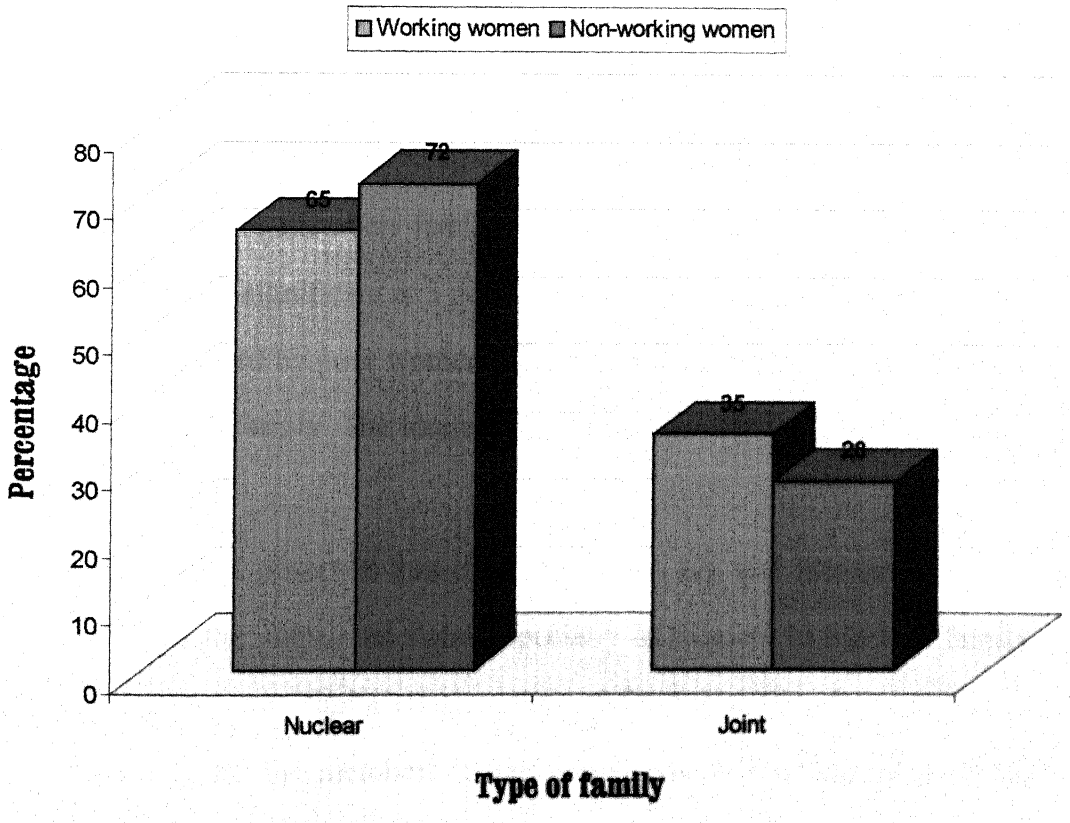


Fig. 5.6: Distribution of respondents according to type of family

while in the non-working group 72.0 per cent belonged to nuclear families and 28.0 per cent belong to joint families. The observed value of χ^2 (1.135) was non-significant at 5.0 per cent level of significance. Family type is one of the important factors that affect the attitude and behaviour of women. Nutrition awareness for women is extremely important because they as nurturers are engaged in bringing up our future generations.

Family size

Table 5.7 Distribution of respondents according to family size

Family size	Working women	Non-working women	Total
Up to 5 members	62 (62.0)	70 (70.0)	132 (66.0)
6 and above	38 (38.0)	30 (30.0)	68 (34.0)
Total	100 (100.0)	100 (100.0)	200 (100.0)
χ^2	1.426	P > 0.05	

(Figures in parenthesis indicate percentage of respective values)

Table 5.7 indicates the distribution of respondents according to family size, 62.0 per cent working women respondents have 5 members in the family whereas 38.0 per cent have 6 and above members in family. 70.0 per cent non-working women respondents have up to 5 members family size while 30.0 per cent have 6 and above members family size. The observed value of χ^2 (1.426) was found to be non-significant at 5 per cent level of significance. It is a general fact that money earned by poor women is more likely to be spent on basic needs of life, children and family. The longest time spent by women is related to food preparation activities.

Generally it is observed that if family size is big and income is less, it negatively affects the nutritional status especially of women. In big size family having less income, per capita consumption of food decreases because it get distributed among all the members in the family and in our culture it is the

tradition that women eat at last, so women is the sufferer because she eats the left over. Thus family size directly affects the nutritional status of women.

Family income

Table 5.8 Distribution of respondents according to family income

Family income	Working women	Non-working women	Total
Up to Rs. 10000	20 (20.0)	35 (35.0)	55 (27.5)
Rs. 10000 to Rs. 20000	42 (42.0)	49 (49.0)	91 (45.5)
Rs. 20000 to Rs. 30000	20 (20.0)	12 (12.0)	32 (16.0)
Rs. 30000 & above	18 (18.0)	4 (4.0)	22 (11.0)
Total	100 (100.0)	100 (100.0)	200 (100.0)
χ^2	15.538* P < 0.05		

(Figures in parenthesis indicate percentage of respective values)

Table 5.8 reveals the distribution of respondents according to family income, 42.0 per cent working women respondents belonged to Rs. 10000 to Rs. 20000 monthly income group whereas 20.0 per cent working women respondents belonged to up to Rs. 10000 and Rs. 20000 to Rs. 30000 monthly income respectively. Maximum 49.0 per cent non-working women respondents belonged to Rs. 10000 to Rs. 20000 monthly incomes whereas 35.0 per cent belonged up to Rs. 10000 monthly incomes. Overall majority of the respondents 45.5 per cent belonged to monthly family income Rs. 10000 to Rs. 20000. The observed value of χ^2 (15.538*) was significant at 5.0 per cent level of significance. Women's income has a positive impact not only on the socio-economic status of the families, but also on the food and nutrient intake of the families (Anuradha and Khader, 2001). Involvement of women in improving the cash economy increases the drudgery of their daily activities leading to a greater amount of energy expended and in turn increasing their energy requirements (Sheela and Shashikala, 2001).

Material possession

Table 5.9 Distribution of respondents according to material possession

Material possession	Working women	Non-working women
Up to 5 items	-	4 (4.0)
6 to 10 items	32 (32.0)	64 (64.0)
11 and more items	68 (68.0)	32 (32.0)
Total	100 (100.0)	100 (100.0)

(Figures in parenthesis indicate percentage of respective values)

Table 5.9 reveals the distribution of respondents according to material possession, 68.0 per cent working women have 11 and more items whereas 64.0 per cent non-working women have 6 to 10 items. 32.0 per cent working women respondents have 6 to 10 items as a material possession whereas 32.0 per cent non-working women respondents have 11 and more items as a material possession.

II. Nutrient status of working and non-working women

Anthropometric Assessment

Height

Table 5.10 Mean height of the working and non-working women respondents

Age group	Working women			Non-working women		
	Number	Average height (cm)	S.D.	Number	Average height (cm)	S.D.
25 – 30	18	155.4	5.32	36	152.5	5.38
30 – 35	35	157.5	6.48	46	156.3	7.18
35 – 40	47	153.5	4.80	18	152.4	5.07
Mean	100	154.1	5.53	100	152.9	5.88
r	0.3362*			0.2151		

Table 5.10 shows that working women have mean height 154.1 cm and non-working women have 152.9 cm. Standard deviation was more in 30 to 35 years age group in both groups thus, maximum variation in height was in this

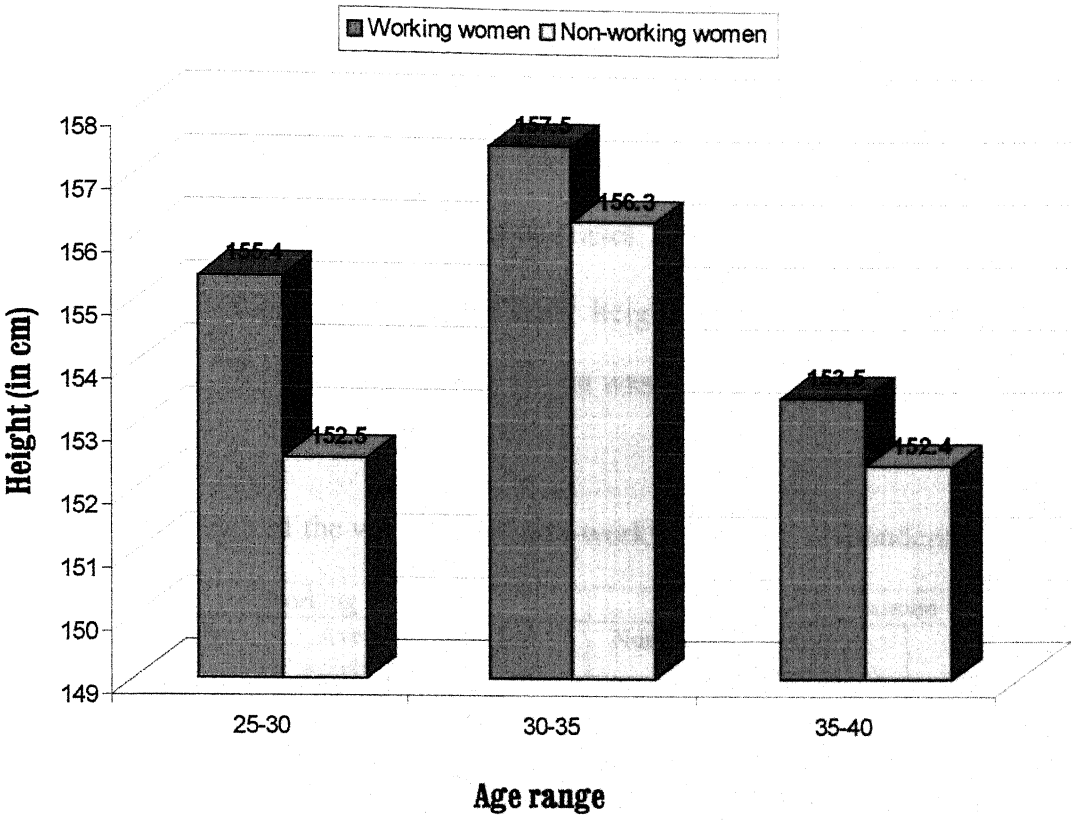


Fig. 5.7: Mean height of the working and non-working women respondents

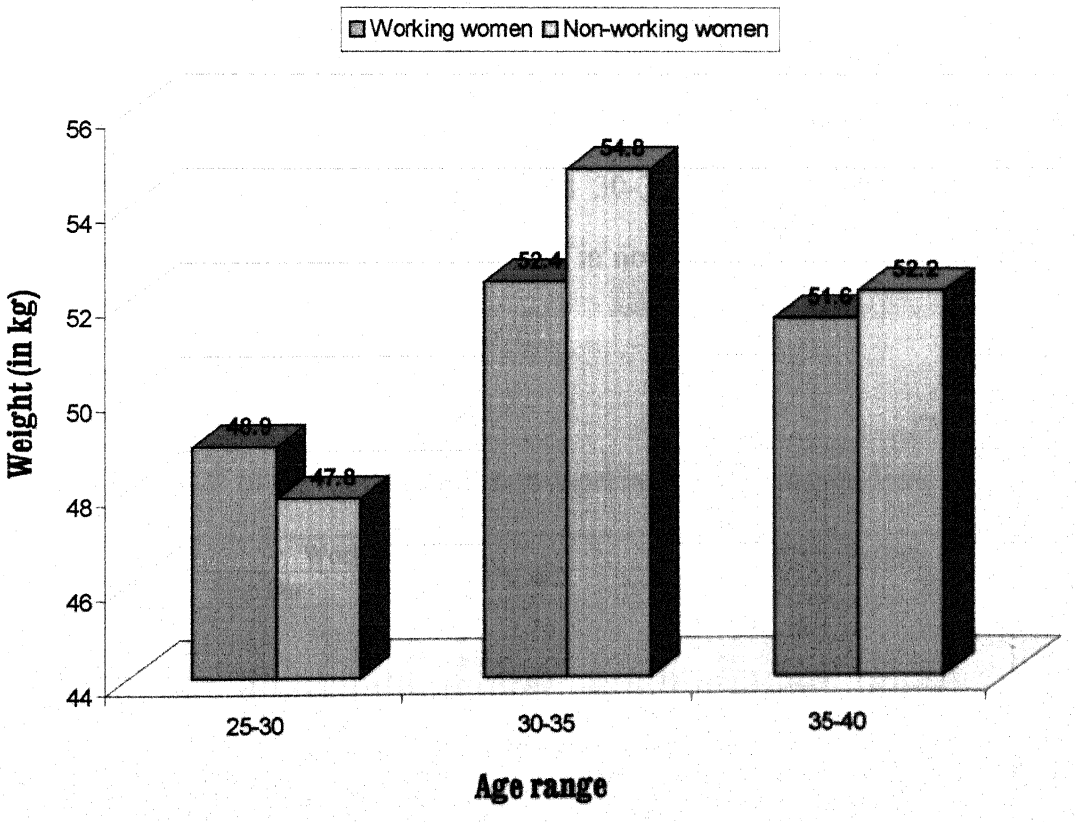


Fig. 5.8: Mean weight of the working and non-working women respondents

age group. The correlation coefficient was found to be significant according to age group the height of the respondents was increases.

According to Noppa *et al.* (1980) body height decreased with age in middle aged women. The reduction in body height was greater at higher ages.

Weight

Table 5.11 Mean weight of the working and non-working women respondents

Age group	Working women			Non-working women		
	Number	Average weight (kg)	S.D.	Number	Average weight (kg)	S.D.
25 – 30	18	48.9	6.32	36	47.8	5.12
30 – 35	35	52.4	8.91	46	54.8	7.81
35 – 40	47	51.6	9.10	18	52.2	9.20
Mean	100	51.0	8.11	100	51.6	7.38
r	0.1812			0.3681*		

Table 5.11 shows the mean weight of the working and non-working women respondents, mean weight of the working women respondents was 51.0 kg and non-working women respondents 51.6 kg. The more variation in weight was found to be 35-40 years age group and 30-35 years age group. The correlation coefficient was positively significant in non-working group and non-significant in working group.

BMI

Table 5.12 Mean BMI of the working and non-working women respondents

Age group	Working women			Non-working women		
	Number	BMI	S.D.	Number	BMI	S.D.
25 – 30	18	20.2	3.22	36	20.6	2.46
30 – 35	35	21.1	3.60	46	22.4	3.01
35 – 40	47	21.9	2.87	18	22.5	3.22
Mean	100	21.1	3.23	100	21.8	2.90
r	0.4146*			0.3891*		

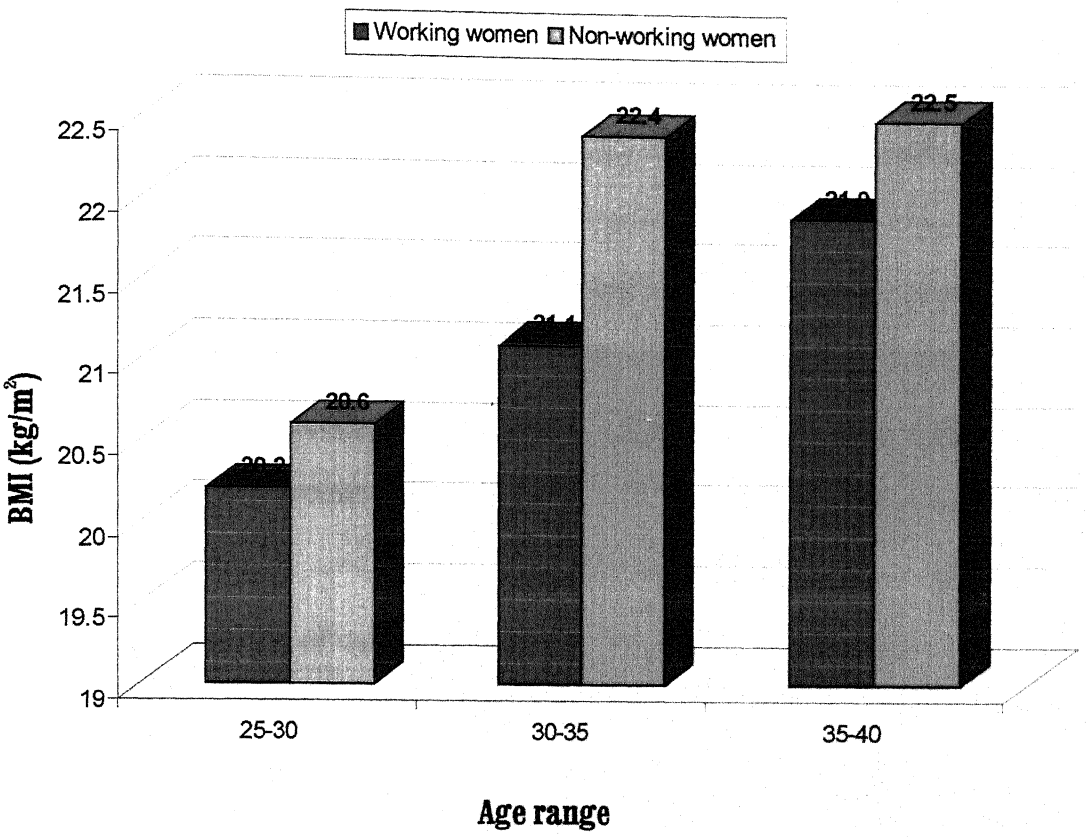


Fig. 5.9: Mean BMI of the working and non-working women respondents

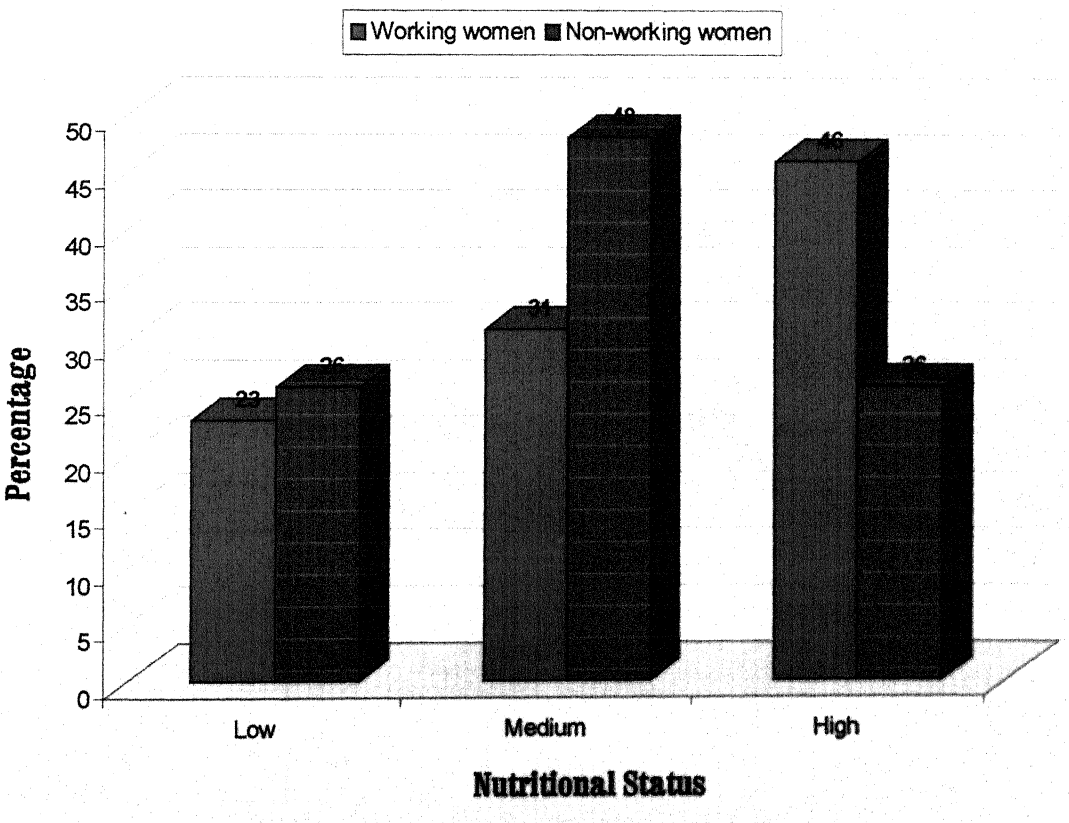


Fig. 5.10: Categorization of women according to their nutritional status

Table 5.12 reveals the mean BMI of the working and non-working women respondents, mean BMI for working women was 21.1 and for non-working women 21.8. In working women group more variation was found in the age group of 30-35 years whereas in non-working women it was found in 35 to 40 years. The correlation coefficient was found to be significant in non-working group and in working women the correlation coefficient was found to be statistically significant.

Table 5.13 Categorization of women respondents according to BMI grade

BMI	Grade	Working women		Non-working women	
		F	%	F	%
< 16	Grade 3 thinness	-	-	-	-
16 – 16.9	Grade 2 thinness	-	-	-	-
17 – 18.5	Grade 1 thinness	6	6.0	7	7.0
18.5 – 24.9	Normal range	83	83.0	78	78.0
> 25	Obese	11	11.0	15	15.0

Table 5.13 shows the categorization of working and non-working women according to BMI grade, 83.0 per cent working women were in normal BMI category whereas 11.0 per cent in obese grade. 78.0 per cent non-working women respondents belonged to normal BMI grade whereas 15.0 per cent non-working women were in obese category and 7.0 per cent in grade 1 thinness category.

Table 5.14 Categorization of women according to their nutritional status

Nutritional status	Working women	Non-working women
Low	23 (23.0)	26 (26.0)
Medium	31 (31.0)	48 (48.0)
High	46 (46.0)	26 (26.0)
Total	100 (100.0)	100 (100.0)
χ^2	9.397*	P < 0.05

(Figures in parenthesis indicate percentage of respective values)

The perusal of Table 5.14 reveals the nutritional status of working and non-working women respondents based on BMI, in working category maximum 46.0 per cent belonged to high nutritional status followed by 31.0 per cent medium nutritional status. This is due to income and other causes. In non-working women category majority of the women (48.0 %) have medium nutritional status followed by 26.0 per cent low and high nutritional status respectively. Nutrition is one of the most important factors influencing the quality of human life. Nutritional status is an important health indicator to assess a country's health status and morbidity pattern. In developing countries, women mature bearing obvious evidence of deprivation in childhood, namely stunting. Nutritional disorders are very frequent in women and involve a high risk of morbidity and mortality. Studies on nutritional status are very important in the women of childbearing age because of low to moderate prevalence of possible deficiencies. The relationship between nutritional status and health of mothers and newborns is well documented. Morbidity and mortality are inversely related to socio-economic status. Moreover, during natural disasters, increased gender discrimination has been observed in previous studies, with a disproportionate increase in female mortality in severe food crises. A negative energy balance and chronic malnutrition have been reported in low income. The observed value of χ^2 (9.397*) was significant at 5.0 per cent level of significance.

Clinical Assessment

Table 5.15 Clinical assessment of the respondents

Criteria	Working women	Non-working women
1. General appearance		
Healthy	74 (74.0)	59 (59.0)
Unwell	22 (22.0)	32 (32.0)
Ill	4 (4.0)	9 (9.0)
χ^2	5.467	P > 0.05
2. Hair		
Normal	52 (52.0)	60 (60.0)
Lack of luster	30 (30.0)	18 (18.0)
Thinness & sparseness	8 (8.0)	14 (14.0)
Easy pluckability	10 (10.0)	8 (8.0)
χ^2	5.430	P > 0.05
3. Face		
Normal	94 (94.0)	92 (92.0)
Depigmentation	-	18 (18.0)
Moonface	2 (2.0)	-
Pale	4 (4.0)	8 (8.0)
χ^2	0.307	P > 0.05
4. Eyes		
Normal	88 (88.0)	84 (84.0)
Pale conjuctiva	4 (4.0)	6 (6.0)
Itching	8 (8.0)	10 (10.0)
χ^2	0.715	P > 0.05
5. Lips		
Normal	95 (95.0)	98 (98.0)
Fissuring at corners	4 (4.0)	-
Swollen	1 (1.0)	2 (2.0)
χ^2	1.332	P > 0.05
6. Teeth		
Normal	60 (60.0)	64 (64.0)
Mottled enamel	16 (16.0)	18 (18.0)
Caries	24 (24.0)	18 (18.0)
χ^2	1.104	P > 0.05
7. Gums		
Normal	92 (92.0)	88 (88.0)
Spongy	-	10 (10.0)
Bleeding gums	8 (8.0)	2 (2.0)
χ^2	0.889	P > 0.05

8. Skin		
Healthy	84 (84.0)	90 (90.0)
Dryness	16 (16.0)	10 (10.0)
χ^2	1.592	P > 0.05
9. Nails		
Normal	84 (84.0)	90 (90.0)
Brittle	16 (16.0)	10 (10.0)
χ^2	1.592	P > 0.05
10. Posture		
Normal	90.0 (90.0)	85 (85.0)
Fleeting joint pain	10 (10.0)	15 (15.0)
χ^2	1.143	P > 0.05

(Figures in parenthesis indicate percentage of respective values)

Table 5.15 reveals the clinical assessment of working and non-working women respondents, 74.0 per cent working women respondents were looking healthy in general appearance whereas 59.0 per cent in non-working women respondents. 22.0 per cent working women were unwell while 32.0 per cent non-working women were unwell. The observed value of χ^2 was non-significant at 5.0 per cent level of significant at 2 d.f.

52.0 per cent working women respondents have normal hair while 60.0 per cent non-working women respondents have normal hair. 30.0 per cent working women respondents have lack of luster due to some working condition. Only 18.0 per cent non-working women respondents have lack of luster. The observed value of χ^2 (5.430) was non-significant at 5.0 per cent level of significance. More than 90 per cent women in both groups have normal face appearance and the calculated value of χ^2 was non-significant at 5.0 per cent level of significance. About 85.0 per cent women respondents in both groups have normal eyes. 8.0 per cent working women respondents were suffering from itching problem while 10.0 per cent non-working women were suffering from this problem. 6.0 per cent non-working women were suffering from the problem

of pale conjunctiva. The observed value of χ^2 was non-significant at 5.0 per cent level of significance.

More than 95.0 per cent women in both groups have normal lips only 2.0 per cent non-working women have swollen lips. The calculated value of χ^2 (1.332) was non-significant. About 60.0 per cent women in both groups have normal teeth and 24.0 per cent working women have caries in teeth, while 18.0 per cent in non-working group. 18.0 per cent non-working women respondents have mottled enamel in teeth whereas 16.0 per cent in working women group. About 90.0 per cent women in both groups have normal gums whereas 10.0 per cent non-working women have spongy gums. 8.0 per cent working women were suffering from bleeding gums because she was not cared for bleeding gums at once. The observed value of χ^2 (0.889) was non-significant at 5.0 per cent level of significance hence both group was independent.

About 85.0 per cent women in both groups have healthy skin whereas 16.0 per cent working women have dry skin. The calculated value of χ^2 (1.592) was non-significant. About 85.0 per cent women in both groups have normal nails whereas 16.0 per cent working women have brittle nails. 10.0 per cent non-working women respondents have brittle nails. The observed value of χ^2 was non-significant. About 85.0 per cent women in both groups have normal posture whereas 15.0 per cent non-working women have fleeting joint pain. The observed value of χ^2 (1.143) was non-significant at 5.0 per cent level.

Morbidity Pattern

Table 5.16 Distribution of working and non-working women according to their morbidity pattern.

Ailments	Frequently		Occasional	
	Working women	Non-working women	Working women	Non-working women
Headache	60 (60.0)	23 (23.0)	37 (37.0)	73 (73.0)
Cold and cough	9 (9.0)	26 (26.0)	89 (89.0)	72 (72.0)
Backache	32 (32.0)	35 (35.0)	44 (44.0)	60 (60.0)
Gastric problem	19 (19.0)	40 (40.0)	38 (38.0)	41 (41.0)
Fever	9 (9.0)	10 (10.0)	86 (86.0)	88 (88.0)
Joint pain	27 (27.0)	23 (23.0)	39 (39.0)	67 (67.0)
Other problems	18 (18.0)	15 (15.0)	9 (9.0)	11 (11.0)

(Figures in parenthesis indicate percentage of respective values)

Table, 5.16 shows the morbidity pattern of working and non-working women respondents, 60.0 per cent working women have headache frequently due to working environment and conditions whereas 73.0 per cent non-working women have occasional headache. 26.0 per cent non-working women were suffering from cold and cough while 89.0 per cent working women occasionally. 32.0 per cent working women respondents were suffering from backache whereas 35.0 per cent non-working women have some problem. 38.0 per cent working women have gastric problem occasionally, 86.0 per cent working women have fever occasionally whereas 88.0 per cent non-working women were suffering from fever occasionally. 27.0 per cent working women have suffered form joint pain while 39.0 per cent occasionally. 23.0 per cent non-working women were suffering from joint pain while 67.0 per cent occasionally. 18.0 per cent working women complained for other problems like high blood pressure, diabetes, anaemia, migraine and stone problem whereas 15.0 per cent non-working women complained for high blood pressure, filaria, diabetes and stone in gall bladder. Thus, the illnesses reported among the women in the study were

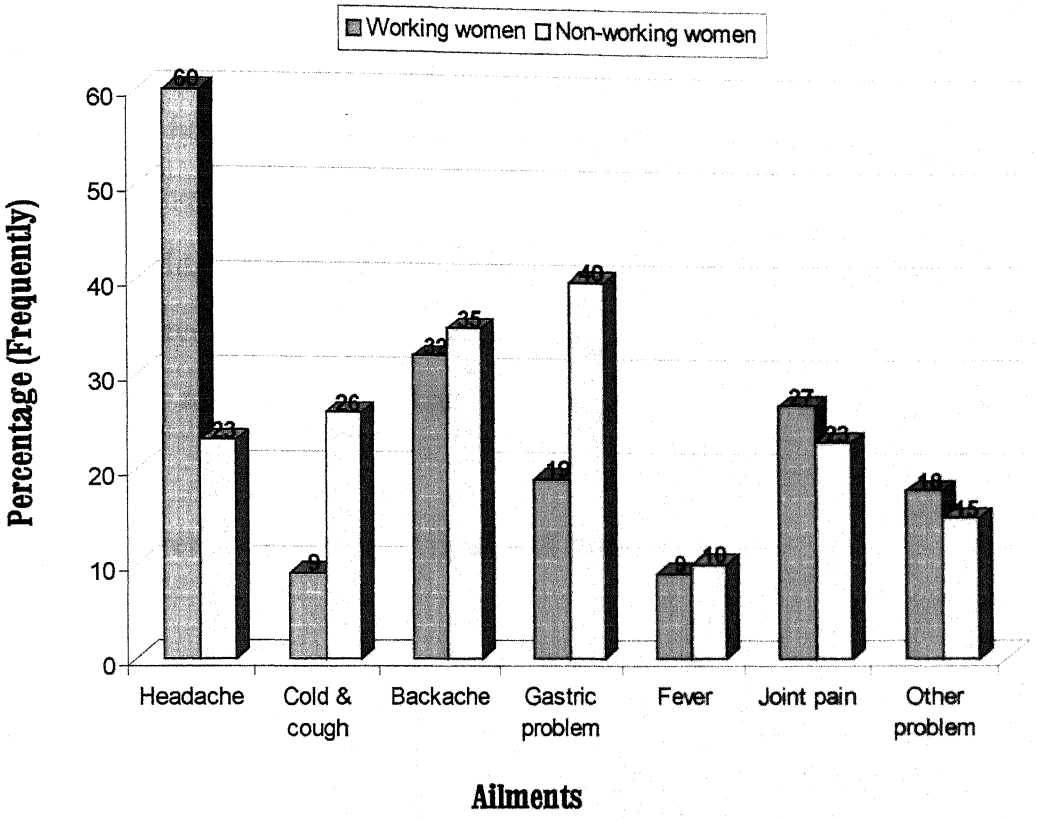


Fig. 5.11(A): Distribution of working and non-working women according to their morbidity pattern

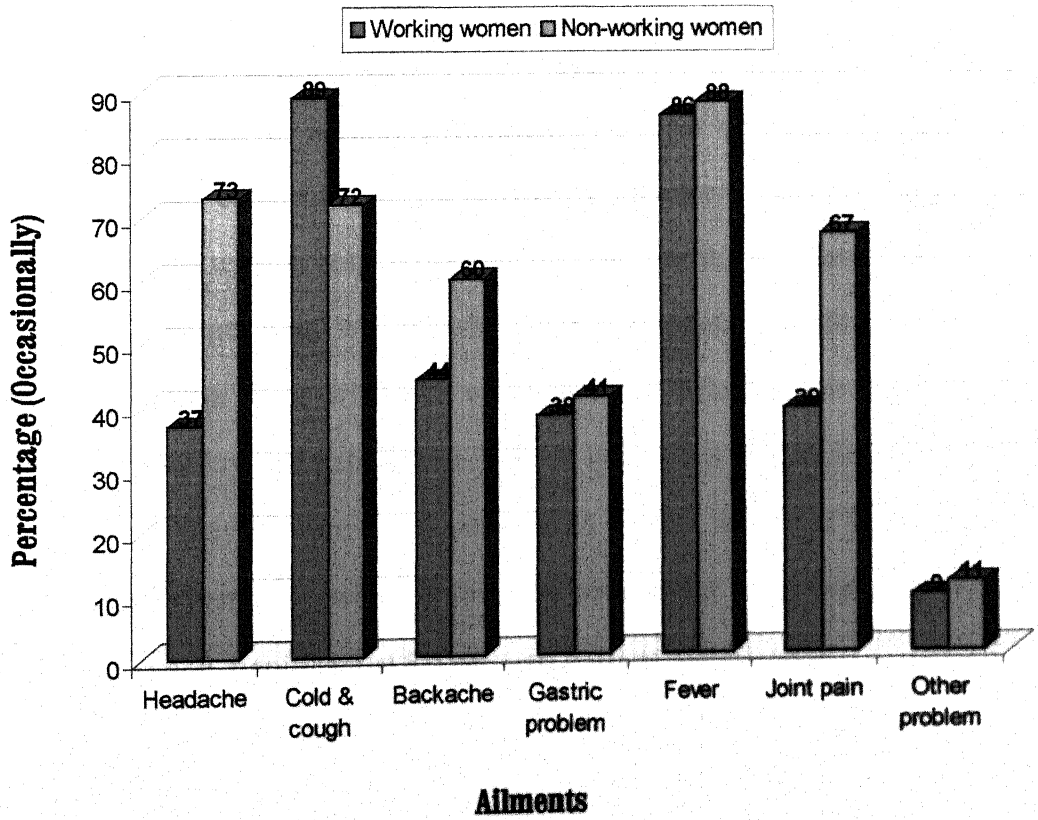


Fig. 5.11(B): Distribution of working and non-working women according to their morbidity pattern

mainly headache, backache and pain in joints. This may be due to considerable workload for women who spend 8-9 hours at work and continue their work at home also. In addition to this, women whose working place is for away from their home, and have to travel a long distance daily, environmental pollution and stress of journey may be responsible for high prevalence of headache and backache.

III. Dietary pattern and nutrient intake of the women

Dietary Pattern

Table 5.17 Distribution of the respondents on the basis of food habits

Category	Working women		Non-working women	
	Frequency	Per cent	Frequency	Per cent
Vegetarian	52	52.0	58	58.0
Non-vegetarian	48	48.0	42	42.0
χ^2	0.727		P > 0.05	

Table 5.17 shows the distribution of the working and non-working women respondents on the basis of food habits, 52.0 per cent of the working women and 58.0 per cent of the non-working women were vegetarian. 48.0 per cent of the working women respondents and 42.0 per cent of the non-working women were non vegetarian. Woman who takes non-vegetarian diet has better nutritional status than those who take vegetarian diet because non-vegetarian foods like meat, poultry and fish are rich in good quality protein, which helps in body building and they also provide B vitamins. A special feature of flesh foods is their content of vitamin B_{12} which is absent in plant foods. The observed value of χ^2 (0.727) was non-significant at 5.0 per cent level of significance.

Table 5.18 Distribution of working and non-working women on the basis of dietary habits

Category	Working women		Non-working women	
	Yes	No	Yes	No
Cereal legume combination	90	10	82	18
χ^2	2.658		P > 0.05	
Wheat bran in diet	75	25	70	30
χ^2	0.627		P > 0.05	
Preference for salad	84	16	52	48
χ^2	23.529*		P < 0.05	
Deep fried meals	32	68	48	52
χ^2	5.333*		P < 0.05	
Consumption of favourite food	74	26	42	58
χ^2	23.858*		P < 0.05	
Eating meal at same time	76	24	60	40
χ^2	5.882		P > 0.05	
Planning of menu	84	16	46	54
χ^2	31.736*		P < 0.05	
Awareness related to balanced diet	82	18	60	40
χ^2	11.753*		P < 0.05	

Table 5.18 reveals that 90.0 per cent working women were taking cereal legume combination in the meals whereas 82.0 per cent non-working women respondents were taking in her meals as a cereal legume combination. The calculated value of χ^2 (2.658) was non-significant. 75.0 per cent working women respondents were taking wheat bran in diet whereas 70.0 per cent non-working women. The observed value of χ^2 (0.627) was non-significant at 5.0 per cent level. 84.0 per cent working women respondents were taking salad in a meal while only 52.0 per cent non-working women respondents were taking salad. Majority of the working women respondents were known about salad and its property. The observed value of χ^2 (23.529*) was significant at 5.0 per cent level of significance at 1 d.f. 32.0 per cent working women respondents were using

deep fried meals whereas 48.0 per cent non-working women respondents were using deep fried meals at lunch and dinner. 74.0 per cent working women have taking favourite food whereas 42.0 per cent non-working women have taking favourite food. The observed value of χ^2 (23.858*) was significant at 5.0 per cent level of significance at 1 d.f. 76.0 per cent working women respondents have taking meal at fixed time as a routine whereas 60.0 per cent non-working women respondents were taking meal at fixed time. The observed value of χ^2 (5.882) was non-significant at 5.0 per cent level of significance. 84.0 per cent working women respondents have prepared meal as a planned menu whereas 46.0 per cent non-working women respondents have planning the meal menu. The observed value of χ^2 (31.736*) was significant at 5.0 per cent level at 1 d.f. 82.0 per cent working women respondents were aware about her balanced diet whereas 60.0 per cent non-working women respondents have aware about her balanced diet. The observed value of χ^2 was significant at 5.0 level and 1 d.f.

In the study on nutritional consciousness among the women of Kerala by BAI (1991), it was found that most of the women (working and non-working) 83.8 per cent know that combined use of rice and wheat is good. Non-working women did not use reuse fired oil as it contained toxic compounds due to constant frying. According to Anuradha and Khader (2001) the women income has a positive impact not only on the socio-economic status of the families, but also on the food and nutrient intake of the families. Bavasvapoornima (2001) also reported that working women were observed to have higher levels of nutrition knowledge than the non-working women though the educational status of both the group were same.

Table 5.19 Snacks intake per day by women

Snacks	Working women		Non-working women	
	Frequency	Per cent	Frequency	Per cent
Never	15	15.0	55	55.0
One snack	50	50.0	32	32.0
2 or more	35	35.0	13	13.0
χ^2	36.892*		P < 0.05	

Table 5.19 reveals the snacks intake per day, snacks in between the meal was more preferred by the working women respondents, 50.0 per cent took it one time while 35.0 per cent took 2 or more times in between the meal. 55.0 per cent of the non-working women respondents never took snacks in between the meals. It was observed that working women are always in hurry in morning so they prefer to take snacks at evening time when they came back to their homes. They feel it necessary from health point of view to take at least one snack in evening time to receive the energy they spend during working and to maintain their health and working efficiency. The calculated value of χ^2 (36.892*) was significant at 5 per cent level of significance.

During the survey it was observed that many of the house wives were taking only a cup of tea in the morning instead of breakfast, or neither tea nor breakfast. On the query about the breakfast, their reply was that they did not have enough time or they did not like to have the breakfast at all. On the other hand, working females were taking regular breakfast and were taking proper diet than non-working women. Working women being educated, aware of the fact that the balanced or good diet is necessary both for mental as well as physical health.

Table 5.20 Distribution of working and non-working women respondents according to heaviest meal

Heaviest meal	Working women		Non-working women	
	Frequency	Per cent	Frequency	Per cent
Breakfast	25	25.0	20	20.0
Lunch	24	24.0	62	62.0
Dinner	51	51.0	18	18.0
χ^2	33.129*		P < 0.05	

Table 5.20 shows the comparison of heaviest major meal among the respondents, 51.0 per cent working women respondents had taken dinner, 24.0 per cent had lunch and only 25.0 per cent had breakfast as their major meal. In case of non-working women 62.0 per cent of them had lunch as their major meal. Due to the working hours of the respondents of working group, majority of them were taking heaviest major meal at night time. It was observed that working women feel relaxed at night time and can give more time to kitchen as compare to morning. So they include maximum recipe in their dinner like, *rayta*, salad, dhal and rice etc. and in lunch they mostly take *chapati, puri* or *paratha* with *sabji,* whereas in case of housewives whose major task is cooking, they give maximum time for cooking in lunch, thus their heaviest meal observed was lunch.The observed value of χ^2 (33.129*) was significant at 5.0 per cent and 2 d.f.

Table 5.21 Preference for meals outside home

Eat meal outside	Working women	Non-working women
Never	4 (4.0)	28 (28.0)
Daily	-	-
Weekly	30 (30.0)	18 (18.0)
Fortnightly	16 (16.0)	10 (10.0)
Monthly	50 (50.0)	44 (44.0)
χ^2	22.768*	P < 0.05

(Figures in parenthesis indicate percentage of respective values)

From Table 5.21 it was seen that in case of working women, 35.0 per cent eat weekly, 18.0 per cent fortnightly and 55.0 per cent monthly outside the house. Incase of non-working women respondents 18.0 per cent eat weekly, 10.0 per cent fortnightly and 48.0 per cent monthly outside the house. Working women respondents were preferred more in weekly and monthly due to sound earning and she want to change meal in a month as well as save her from cooking task. In Indian culture there is no freedom for a women either working or housewife to take food daily outside the home that is in restaurants and hotels etc. and it is not very good from health point of view too, because the preference of women observed for meal outside the home was mainly for fast foods which contains high fat and more spices. The calculated value of χ^2 (22.768*) was significant at 5.0 per cent and 3 d.f.

Table 5.22 Preference for place of eating

Category	Working women		Non-working women	
	Frequency	Per cent	Frequency	Per cent
In front of T.V.	50	50.0	44	44.0
In kitchen	5	5.0	14	14.0
In dining room	24	24.0	40	40.0
In standing	21	21.0	2	2.0
χ^2	24.342*		P < 0.05	

It was seen from above Table 5.22 that 50.0 per cent of working women and 44.0 per cent non-working women respondents were eating in front of T.V., 5.0 per cent working and 14.0 per cent non-working women were eating in kitchen, 24.0 per cent working and 40.0 per cent non-working women respondents were eating in dining room. 21.0 per cent working women while on the go as they were not have much time because of working condition. Women have a burden of domestic work, either she is working or housewife so she does not want to waste her time in eating and she prefer to take her food in front of

T.V. for entertainment of herself with fooding. The observed value of χ^2 (24.342*) was significant at 5.0 level of significance.

Table 5.23 Distribution of the respondents on the basis of decision regarding meals

Category	Working women		Non-working women	
	Frequency	Per cent	Frequency	Per cent
Husband	12	12.0	34	34.0
Children	15	15.0	36	36.0
Herself	45	45.0	15	15.0
Seasonal food	28	28.0	15	15.0
χ^2	38.099**		P < 0.01	

The perusal of Table 5.23 reveals the distribution of the respondents on the basis of decision regarding meals, 45.0 per cent of the working women themselves took the decision regarding meals while only 15.0 per cent was in the case of non-working women group. In the non-working group, in the decision regarding meal 34.0 per cent depend on husbands view, 36.0 per cent on children, while, 15.0 per cent used seasonal food in their meals. The observed value of χ^2 (38.099**) was significant at 1.0 per cent and 3 d.f.

Table 5.24 Type of cooking method

Category	Working women		Non-working women	
	Frequency	Per cent	Frequency	Per cent
Pressure cooking	72	72.0	68	68.0
Frying cooking	10	10.0	24	24.0
Roasting cooking	14	14.0	4	4.0
Others	4	4.0	4	4.0
χ^2	11.435**		P < 0.01	

From the Table 5.24, it was concluded that pressure cooking was frequently used by the women, 72.0 per cent among the working women and 68.0 per cent among the non-working group of women respondents were using pressure cooking. Working women were less using frying cooking while non-working women (24.0 %) were adopted frying cooking. Working women have

shortage of time so she want to finish her cooking task as early as possible and being aware of nutritional losses during cooking, she prefers pressure cooking which save her time as well as nutrients. While in case of housewife having proper time for cooking and lack of nutrition knowledge, she prefers frying with pressure cooking. The observed value of χ^2 (11.435**) was significant at 1.0 per cent level of significance.

Table 5.25 Washing practices related to vegetables

Practices	Working women	Non-working women
After peeling	46 (46.0)	41 (41.0)
After cutting	54 (54.0)	59 (59.0)
χ^2	0.509	P < 0.01

(Figures in parenthesis indicate percentage of respective values)

From the above Table 5.25, it was seen that 54.0 per cent of the working women and 59.0 per cent of the non-working women respondents washed the vegetable after cutting. Majority of the women knew the disadvantages of it but they followed of their habit. 46.0 per cent of the working women and 41.0 per cent of the non-working women were washed vegetables after peeling. The observed value of χ^2 (0.509) was non-significant at 5.0 per cent level.

Table 5.26 Distribution of respondents according to food frequency

Food groups	Working women				Non-working women			
	Daily	Twice in a week	Once in a week	Occasionally	Daily	Twice in a week	Once in a week	Occasionally
Cereals	100.0	-	-	-	100.0	-	-	-
Pulses	68.0	30.0	2.0	-	54.0	40.0	6.0	-
Green leafy vegetables	66.0	29.0	5.0	-	45.0	32.0	23.0	-
Roots and tubers	58.0	31.0	11.0	-	70.0	27.0	3.0	-
Fruits	76.0	20.0	4.0	-	45.0	38.0	13.0	4.0
Fats and oils	100.0	-	-	-	100.0	-	-	-
Milk	81.0	19.0	-	-	60.0	30.0	10.0	-
Flesh food	2.0	22.0	21.0	3.0	1.0	20.0	16.0	5.0
Sugar and jaggery	75.0	20.0	5.0	-	72.0	22.0	6.0	-

Table 5.26 indicates the categorization as percentage of respondents according to food frequency, working women respondents have taking daily cereals (100.0 %), pulses (68.0 %), green leafy vegetables (66.0 %), roots and tubers (58.0 %), fruits (76.0 %), fats and oil (100.0 %), milk (81.0 %) and sugar and jaggery (75.0 %), whereas once a week pulses (2.0 %), roots and tubers (11.0 %), fruits (4.0 %) and sugar and jaggery (5.0 %), working women were aware about their health, they were taking more pulses, green leafy vegetables, fruits and milk in the diet daily. In non-working women group they were taking twice in a week pulses (40.0 %), green leafy vegetables (32.0 %), roots and tubers (27.0 %), fruits (38.0 %), flesh foods (20.0 %), milk (30.0 %) and sugar and jaggery (22.0 %). Among non-working women 4.0 per cent respondents have taking fruits and 5.0 per cent respondents have taking flesh food occasionally. In non-working women category they were taking more roots and tubers in their daily diet as compared with working women respondents. It is observed that, as income increases, there is an increase in the consumption of "protective" foods such as pulses, fruits, milk and dairy products, which, while adding to calories contribute significantly to the increase in other nutrients whose intake is particularly lacking in the diet of the poor.

Table 5.27 Nutrient intake of respondents according to type of work

Nutrient intake	Working women			Non-working women Sedentary
	Sedentary	Moderate	Heavy	
Energy (Kcal)	1848 (-1.4)	1979 (-11.1)	2234 (-23.6)	1803 (-3.8)
Protein (gm)	48.2 (-3.6)	49.1 (-1.8)	53.0 (+6.0)	46.8 (-6.4)
Fat (gm)	23.6 (+18.0)	22.3 (+11.5)	23.7 (+18.5)	21.2 (+6.0)
Calcium (mg)	388.2 (-2.9)	473.8(+18.4)	500.3 (+25.1)	383.0 (-4.2)
Iron (mg)	25.2 (-16.0)	24.3 (-19.0)	24.3 (-19.0)	23.2 (-22.7)
β- carotene (µg)	868.4 (-63.8)	1311.7 (-45.3)	1302.9 (-45.7)	1006.9 (-58.0)
Thiamine (mg)	1.28 (+42.2)	1.43 (+30.0)	1.52 (+26.7)	1.44 (+60.0)
Riboflavin (mg)	0.92 (-16.4)	1.04 (-20.0)	1.07 (-28.7)	0.82 (-25.4)

(Figures in parenthesis indicate per cent deficit / increase from RDA)

Table 5.27 reveals the nutrients intake of the respondents according to their type of work, in working women category energy intake was deficit in moderate and heavy worker and protein intake was deficit (-6.0 %) in heavy worker. Fat shows increase per cent in all category like sedentary (+18.0 %), moderate (+11.5 %) and heavy (+18.5 %). In working women, calcium intake shows positive increase in moderate and heavy workers category. Iron intake was deficit in all three categories, deficit per cent ranged from -19.0 to -16.0 per cent. Riboflavin shows deficit per cent (-16.4), (-20.0) and (-28.7) in sedentary, moderate and heavy worker category respectively and thiamin intake was higher than RDA in all three categories. In non-working women group, which belonged to sedentary worker category, the intake of most of the nutrients was deficit except for fat and thiamin. The deficit per cent was energy (-3.8 %), protein (-6.4 %), calcium (-4.2 %), iron (-22.7 %), β-carotene (-58.0 %) and riboflavin (-25.4 %) and increase per cent for fat and thiamine was (+6.0 %), (+60.0 %) respectively.

Table 5.28 Mean energy intake by working and non-working women respondents

Age group	Working women		Non-working women		RDA (Kcal)	Deficit (%)	
	N	Energy (Kcal)	N	Energy (Kcal)		Working	Non-working women
25 – 30	18	2280.5	36	1663.4	1875	+21.6	-11.3
30 – 35	35	1955.4	46	1785.6	1875	+ 4.3	- 4.8
35 – 40	47	1824.8	18	1961.6	1875	- 2.7	+ 4.6
Mean	100	2020.3	100	1803.5	1875	+ 7.7	- 3.8
r	- 0.4103		0.3617*				

Table 5.28 shows that mean energy intake was 2020.3 Kcal in the working women and 1803.5 Kcal in the non-working women respondents. Among the working women in the age group of 25-30 years energy intake was increased by 21.6 per cent and in the non-working women in the age group 35-40 years energy intake increased by 4.6 per cent. The energy intake of working

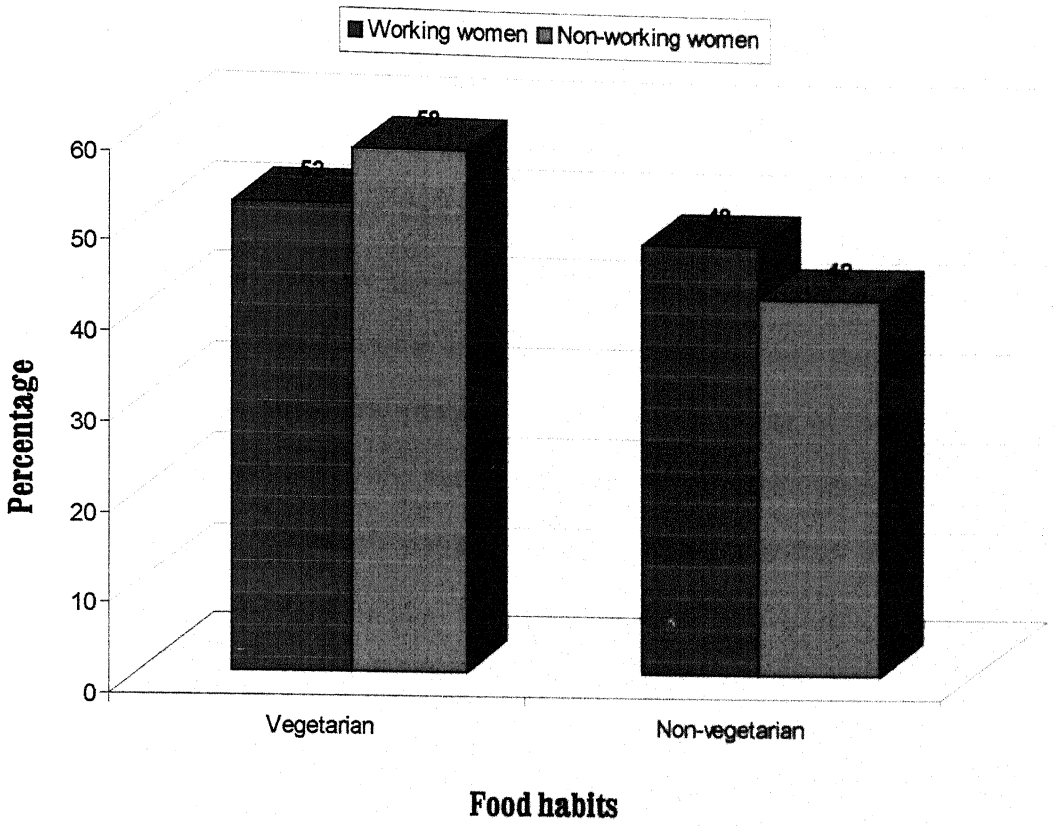


Fig. 5.12: Distribution of respondents on the basis of food habits

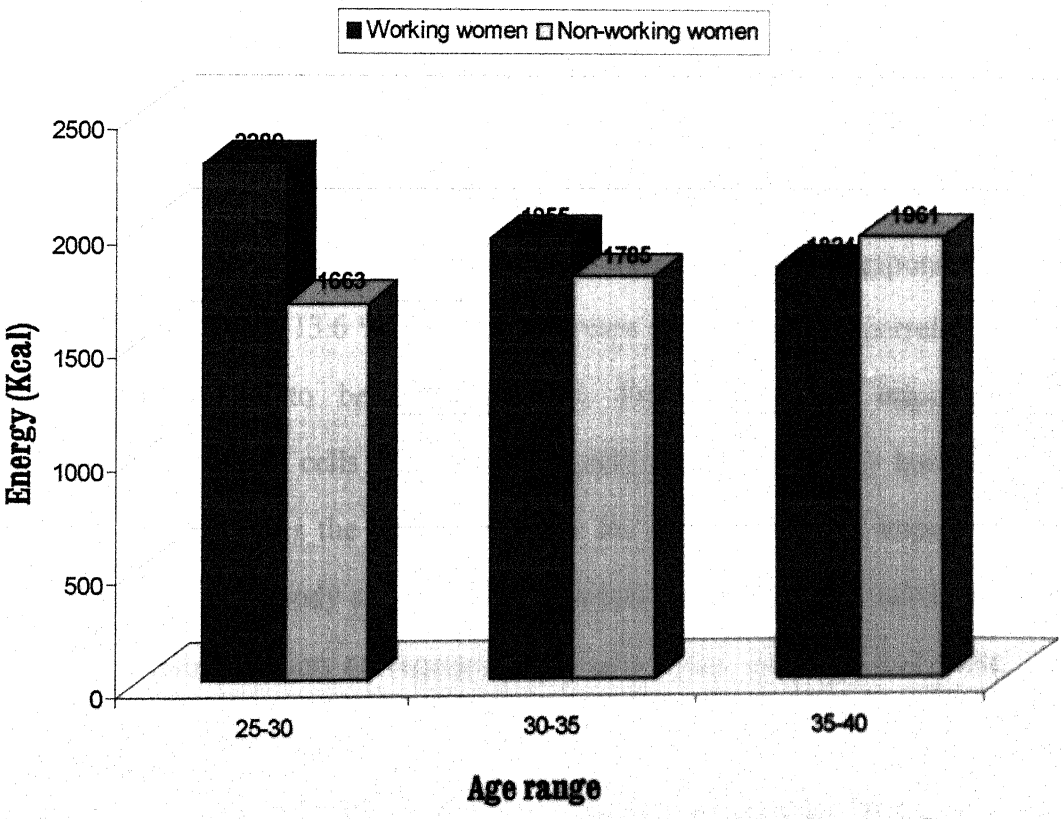


Fig. 5.13: Mean energy intake by working and non-working women respondents

women are decreasing with age, it might be due to the busy schedule of their work activities that they ignore their diet. According to a report in Times of India (2005), women tend to ignore the most important aspect of being a working professional and full-time mom, their own daily diet and nutrition which lead to chronic stress and possibly burn out. Age group of the working women respondents was negatively correlated with energy intake whereas age of non-working women respondents was positively correlated to energy intake.

Table 5.29 Mean protein intake by working and non-working women respondents

Age group	Working women		Non-working women		RDA (g/day)	Deficit (%)	
	N	Protein (g)	N	Protein (g)		Working	Non-working women
25 – 30	18	49.3	36	43.2	50	- 1.4	-13.6
30 – 35	35	53.8	46	46.7	50	+ 7.6	- 6.6
35 – 40	47	47.3	18	50.4	50	- 5.4	+ 0.8
Mean	100	50.1	100	46.8	50	+ 0.2	- 6.4
r	0.0991		-0.1083				

Table 5.29 reveals the mean protein intake of the working and non-working women respondents, which was 50.1 g by working women and 46.8 g by non-working women respondents. Working women have taken more protein (+7.6 %) in age group 30 to 35 years whereas non-working women respondents have taken less protein (-13.6 %) in 25 to 30 years age group. The correlation coefficient was found to be non-significant. Proteins are the important constituent of tissues and cells of the body. Protein supplies the body building material and also provides the energy. Proteins are one of the most important nutrients required by the body and should be supplied in adequate amounts in the diet. Thus, the habitual diets of vegetarians in India based on cereal and pulse has indeed a rational basis.

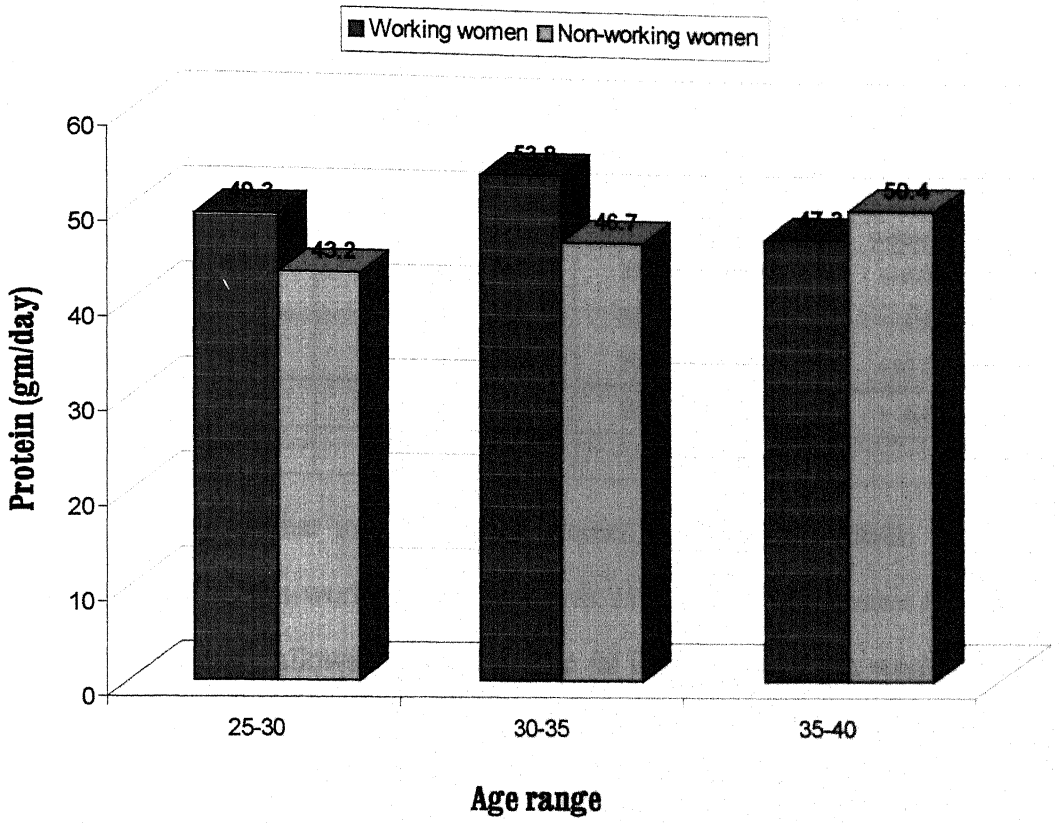


Fig. 5.14: Mean protein intake by working and non-working women respondents

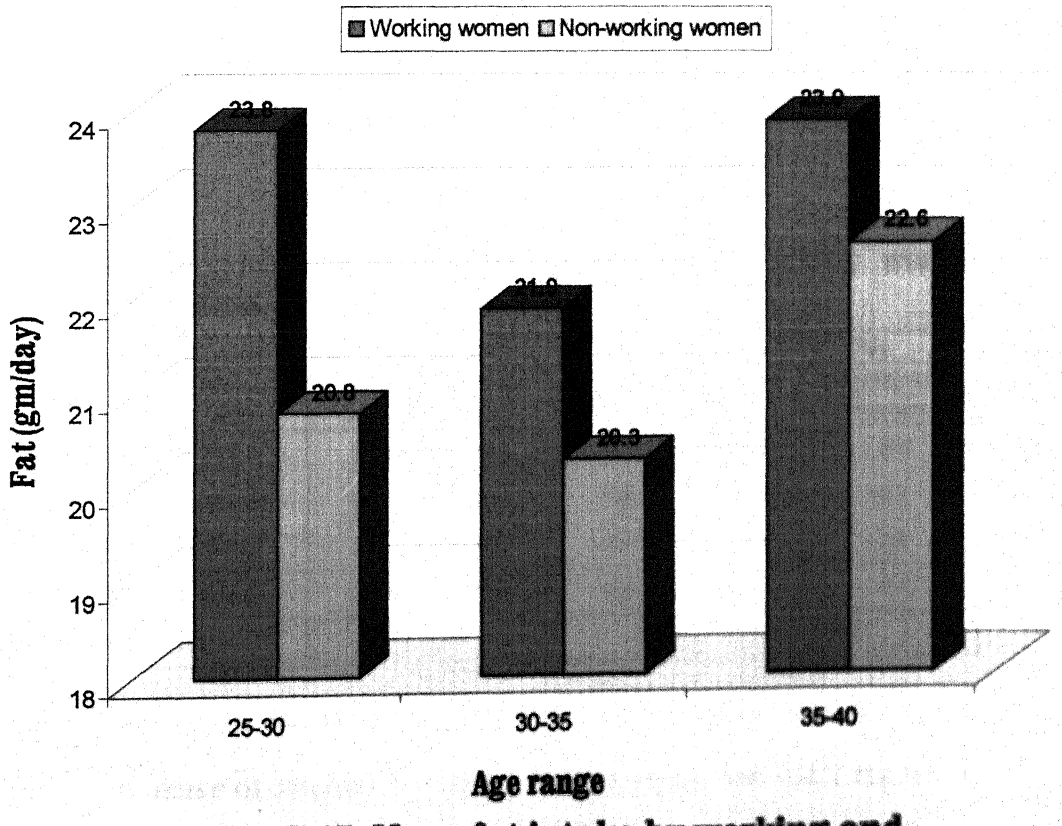


Fig. 5.15: Mean fat intake by working and non-working women respondents

Table 5.30 Mean fat intake by working and non-working women respondents

Age group	Working women		Non-working women		RDA (g/day)	Deficit (%)	
	N	Fat (g)	N	Fat (g)		Working	Non-working women
25 – 30	18	23.8	36	20.8	20	+ 19.0	+ 4.0
30 – 35	35	21.9	46	20.3	20	+ 9.5	+ 1.5
35 – 40	47	23.9	18	22.6	20	+ 19.5	+13.0
Mean	100	23.2	100	21.2	20	+ 16.0	+ 6.0
r	0.3461*		0.1728				

Table 5.30 shows that in the working women the mean fat intake was 23.2 g while in case of non-working women it was 21.2 g which is greater than the recommended dietary allowance of 20 g. The fat intake among the working women in the age group of 25 – 30 years was increased by 19.0 per cent while in the non-working women in age group 35 – 40 years the increase was 13.0 per cent. The correlation coefficient in working women group was significant at 5.0 per cent and in non-working women group, it was non-significant at 5.0 per cent level of significance. Fat is a concentrated source of energy and it supplies per unit weight more than twice the energy furnished by either protein or carbohydrate. Fat is an important component of diet and serves a number of functions in the body.

Table 5.31 Mean calcium intake by working and non-working women respondents

Age group	Working women		Non-working women		RDA (mg/day)	Deficit (%)	
	N	Calcium (mg)	N	Calcium (mg)		Working	Non-working women
25 – 30	18	394.4	36	360.6	400	- 1.4	- 9.8
30 – 35	35	467.8	46	400.3	400	+16.9	+0.1
35 – 40	47	500.1	18	388.4	400	+25.0	-2.9
Mean	100	454.1	100	383.1	400	+13.5	- 4.2
r	0.3902*		-0.1213				

Table 5.31 shows the mean calcium intake of the respondents according to age, the mean intake of calcium in working women group was 454.1 mg while in non-working group it was 383.1 mg. In the working women respondents in

the age group of 25-30 years, the calcium intake was deficit by 1.4 per cent while in the non-working women respondents this figure was 9.8 per cent. Calcium is an essential element required for several life processes. As the structural component, calcium is required for the formation and maintenance of skeleton and teeth. The correlation coefficient in working women group was positively correlated and in non-working women group it was non-significant.

Table 5.32 Mean iron intake by working and non-working women respondents

Age group	Working women		Non-working women		RDA (mg/day)	Deficit (%)	
	N	Iron (mg)	N	Iron (mg)		Working	Non-working women
25 – 30	18	23.4	36	23.1	30	-22.0	-23.0
30 – 35	35	25.6	46	23.8	30	-14.7	-20.7
35 – 40	47	24.7	18	22.6	30	-17.7	-24.7
Mean	100	24.6	100	23.2	30	-18.0	-22.7
r	-2150		-0.3411				

Table 5.32 reveals the mean iron intake of the respondents: iron is an essential element for the formation of haemoglobin of red cells of blood and plays an important role in the transport of oxygen. Rich sources of iron are cereals, millets, pulses, green leafy vegetables. In the working group the mean iron intake was 24.6 mg and in non-working women group it was 23.2 mg against the recommended dietary allowance of 30 mg per day. In the working women in the age group 25-30 years iron intake was deficit by 22.0 per cent while in the non-working women in the age group 35-50 years iron was most deficit by 24.7 per cent. The correlation coefficient for working women group was (-0.2150) and for non-working women group, it was (-0.3411).

Table 5.33 Mean β-carotene intake by working and non-working women respondents

Age group	Working women		Non-working women		RDA (µg/day)	Deficit (%)	
	N	β-carotene (µg)	N	β-carotene (µg)		Working	Non-working women
25 – 30	18	748.1	36	862.3	2400	-68.8	-64.1
30 – 35	35	1608.4	46	898.9	2400	-32.9	-62.5
35 – 40	47	1126.5	18	1259.4	2400	-53.1	-47.5
Mean	100	1161.0	100	1006.9	2400	-51.6	-58.0
r	0.1163		0.1335				

Table 5.33 reveals the mean β-carotene intake by the respondents. it was 1161.0 µg for working women and 1006.9 µg for non-working women respondents. The mean β-carotene intake in case of working women in the age group of 25-30 years was deficit by 68.8 per cent while in non-working women by 64.1 per cent. The correlation coefficient was non-significant at 5.0 per cent level of significance in both groups i.e. working and non-working women.

Table 5.34 Mean thiamine intake by working and non-working women respondents

Age group	Working women		Non-working women		RDA (mg/day)	Deficit (%)	
	N	Thiamine (mg)	N	Thiamine (mg)		Working	Non-working women
25 – 30	18	1.39	36	1.48	0.9	+54.4	+64.4
30 – 35	35	1.46	46	1.27	0.9	+62.2	+41.1
35 – 40	47	1.39	18	1.56	0.9	+54.4	+73.3
Mean	100	1.41	100	1.44	0.9	+56.7	+60 0
r	0.0126		0-.1453				

Table 5.34 shows the mean thiamine intake of the working and non-working women respondents, which was 1.41 mg for the working women respondents and 1.44 mg for non-working women respondents. Its intake was more than the recommended dietary allowance in both the groups. The correlation coefficient was non-significant in both the cases at 5.0 per cent level of significance. The richest source of thiamine is yeast and the outer layers of cereals like rice, wheat and millets. Thiamine is concerned in the proper

utilization of carbohydrates in the body and in the absence of adequate amounts of thiamine full utilization of sugars and starches for meeting the energy needs is adversely affected.

Table 5.35 Mean riboflavin intake by working and non-working women respondents

Age group	Working women		Non-working women		RDA (mg/day)	Deficit (%)	
	N	Riboflavin (mg)	N	Riboflavin (mg)		Working	Non-working women
25 – 30	18	0.96	36	0.79	1.1	-12.7	-28.2
30 – 35	35	1.05	46	0.68	1.1	- 4.5	-38.2
35 – 40	47	1.02	18	0.98	1.1	- 7.3	-10.9
Mean	100	1.01	100	0.82	1.1	- 8.2	-25.5
r	0.0109		0.2054				

The mean riboflavin intake was 1.01 mg/day for working women and 0.82 mg/day for non-working women respondents against the recommended dietary allowance of 1.1 mg/d. In the working women in the age group 25-30 years, it was deficit by 12.7 per cent while in the non-working women group in 30-35 years it was deficit by 38.2 per cent. Riboflavin as a part of a coenzyme is essential for several oxidation processes inside the cell and is concerned with energy and protein metabolism. There is good evidence that poor Indian diets which contain little milk are generally deficient in riboflavin. The correlation coefficient in working women group was 0.0109 and in non-working women group was 0.2054.

Table 5.36 Relationship between awareness and nutrients intake of working and non-working women

Statistics	Protein (g)		Fat (g)		Energy (KCal)		Iron (mg)		Calcium (mg)	
	W	NW	W	NW	W	NW	W	NW	W	NW
X	50.1	46.8	23.2	21.2	2020.3	1803.5	24.6	23.2	454.1	383.1
SD	9.2	9.9	7.1	8.0	264.3	300.5	4.1	3.2	154.1	148.7
Z	3.897*		1.153		3.196*		4.071*		1.663	

Table 5.36 shows the relationship between awareness and nutrients intake of working and non-working women, a non-significant relationship was found

between awareness and nutrients intake in both group however, it can be concluded from the above table that the mean intake of nutrients such as protein, fat, iron and calcium was higher in the working women in comparison to non-working women.



SUMMARY
&
CONCLUSION



Chapter-VI

SUMMARY AND CONCLUSION

A woman, along with man from times immemorial has formed an integral part of social structure throughout the world. In Indian society, she has played and continues to play an important role. It is true that the progress of a country can be judged to a great extent by the status of her women. She plays manifold role in the society; as a mother, as a sister and as a wife. Thus, she is the foundation stone of the family in particular and the society in general.

While women represent 50 per cent of the adult population and one third of labour force, they perform nearly two-third of all working hours and receives only one-tent of the world income. Human Development Report for the year 2000 on the amount of time that women and men spend on market and non market activities by considering 31 countries reveals that women work longer hours than men in nearly every country. Women carry on average 53 per cent of total burden of work ion developing countries and 51 per cent of that in industrial countries. Also, roughly two-third of women's total work time is spent in unpaid non system of national accounts activities.

Women's nutrition has a range of positive effects because healthy women can fulfill their multiple roles generating income, ensuring their families nutrition and having healthy children – more effectively and thereby help advance countries in socio-economic development. Women are often responsible for producing and preparing food for the household. So their knowledge about nutrition can affect the health and nutritional status of the entire family. Promoting greater gender equality, including increasing women's control over resources and their ability to make

decisions, is crucial. Improving women's nutrition can also help nation to achieve three of millennium development goals, which are commonly accepted as a framework for measuring development progress.

Objectives

1. To study the socio-economic status of working and non-working women.
2. To assess the nutritional status of working and non-working women.
3. To study the dietary pattern and nutrient intake of the women.
4. To develop low cost recipes for the respondent including time and money.
5. To develop the nutrition package for awareness purpose among working and non-working women.

Research Methodology

The study was conducted in Lucknow district of Uttar Pradesh. Out of 6 zones, 4 were selected randomly. From each zone, two wards were selected. 25 housewives termed as non-working women and 25 working women were selected purposely from each selected zone. Thus 100 working women and 100 non-working women, total 200 women were selected in the study area. Dependent and independent variables were used such as age, education, caste, nutritional status, nutrient intake, dietary habits etc. The study was mainly survey work. The statistical tools used were percentage, per cent deficit, arithmetic mean, standard deviation, correlation coefficient, Z test and χ^2 test.

Major findings

1. 47.0 per cent working women were belonged to 35 to 40 years age group followed by 35.0 per cent 30 to 35 years age group. 46.0 per cent non-working women respondents were belonged to 30 – 35 years age group followed by 36.0 per cent in 25 to 30 years age group. Age group of the women respondents plays an important role in working and non-working condition.

2. Among working women, 60.0 per cent women respondents were sedentary worker, 28.0 per cent were moderate and 12.0 per cent were heavy worker. Among non-working women all the respondents were sedentary worker. The society's expectations from working women at the domestic front remain the same as those from a non-working woman.

3. 57.0 per cent working women respondents have passed graduate & above education whereas 18.0 per cent have passed intermediate. 22.0 per cent non-working women respondents have passed graduate whereas 22.0 per cent have passed intermediate. 28.0 per cent non-working women respondents have passed high school whereas 14.0 per cent have passed middle class. Education of women is the key factor in achieving better nutrition by determining household food acquisition patterns.

4. 52.0 per cent working women respondents belonged to upper caste whereas 30.0 per cent to other backward caste. 36.0 per cent non-working women respondents were belonged to upper caste while 34.0

per cent other backward caste. 30.0 per cent non-working women and 18.0 per cent working women respondents belonged to SC/ST caste.

5. 81.0 per cent working women respondents belonged to Hindu family and 8.0 per cent to Christian family. 70.0 per cent non-working women respondents belonged to Hindu family and 20.0 per cent to Muslim family. 8.0 per cent non-working women respondents belonged to Sikh religion. Nutritional status depends over the religion because diet and variety of meals are change to different religion category.

6. 65.0 per cent respondents belonged to nuclear families and 35.0 per cent to joint family system in the working group while in the non-working group 72.0 per cent belonged to nuclear families and 28.0 per cent belong to joint families.

7. 62.0 per cent working women respondents have 5 members in the family whereas 38.0 per cent have 6 and above members in family. 70.0 per cent non-working women respondents have up to 5 members in their family, while 30.0 per cent have 6 and above members in family. In big size family having less income, per capita consumption of food decreases because it get distributed among all the members in the family and in our culture it is the tradition that women eat at last, so women is the sufferer because she eats the left over. Thus family size directly affects the nutritional status of women.

8. 42.0 per cent working women respondents belonged to Rs. 10000 to Rs. 20000 monthly income group whereas 20.0 per cent working women respondents belonged to up to Rs. 10000 and Rs. 20000 to Rs. 30000 monthly income respectively. Women's income has a positive impact

not only on the socio-economic status of the families, but also on the food and nutrient intake of the families. Involvement of women in improving the cash economy increases the drudgery of their daily activities leading to a greater amount of energy expended and in turn increasing their energy requirements.

9. 68.0 per cent working women have 11 and more items whereas 64.0 per cent non-working women have 6 to 10 items. 32.0 per cent working women respondents have 6 to 10 items as a material possession whereas 32.0 per cent non-working women respondents have 11 and more items as a material possession.

10. The mean height of the working women was154.1 cm and non-working women was152.9 cm. Standard deviation was more in 30 to 35 year age group in both groups. Thus, maximum variation in height was in this age group.

11. Mean weight of the working respondents was 51.0 kg and non-working women respondents 51.6 kg. The more variation in weight was found in 35-40 years age group and 30-35 years age group. The correlation coefficient was positively significant in non-working group and non-significant in working group.

12. Mean BMI of working women was 21.1 and of non-working women was 21.8. In working women group more variation was found in age group 30-35 years whereas in non-working women it was found in 35 to 40 years. The correlation coefficient was found to be significant in non-working group and in working women the correlation coefficient was found to be statistically significant.

13. 83.0 per cent working women were in normal BMI grade whereas 11.0 per cent in obese grade. 78.0 per cent non-working women respondents were in normal range BMI category whereas 15.0 per cent non-working women were in obese category and 7.0 per cent in grade 1 thinness.

14. In working women category maximum 46.0 per cent belonged to high nutritional status followed by 31.0 per cent medium nutritional status. This is due to income and other causes. In non-working women category majority of the women (48.0 %) have medium nutritional status followed by 26.0 per cent low and high nutritional status respectively. Nutrition is one of the most important factors influencing the quality of human life. Nutritional status is an important health indicator to assess a country's health status and morbidity pattern. In developing countries, women mature bearing obvious evidence of deprivation in childhood, namely stunting.

15. On the basis of clinical assessment it was found that 74.0 per cent working women respondents and 59.0 per cent non-working women respondents were looking healthy in general appearance whereas 22.0 per cent working women and 32.0 per cent non-working women were unwell. 52.0 per cent working women respondents have normal hair while 60.0 per cent non-working women respondents have normal hair. 30.0 per cent working women respondents have lack of luster due to some working condition. Only 18.0 per cent non-working women respondents have lack of luster.

16. On assessing morbidity pattern it was found that 60.0 per cent working women have headache frequently due to working environment and conditions while only 23.0 per cent non-working women have

headache. 26.0 per cent non-working women have suffered from cold and cough while this percentage for working women was 9.0 only. 32.0 percent and 35.0 per cent of the working women respondents and non-working women respondents were suffering from backache respectively. The problem of frequent joint pain was found in 27.0 per cent and 23.0 per cent working and non-working women respondents respectively. The gastric problem was more frequently present among non-working women (40.0%) while, among working women it was 19.0 per cent. 18.0 per cent working women complained for other problems like high blood pressure, diabetes, anaemia, migraine and stones problem whereas 15.0 per cent non-working women complained for high blood pressure, filaria, diabetes and stone in gall bladder etc.

17. 52.0 per cent of the working women and 58.0 per cent of the non-working women were vegetarian. 48.0 per cent of the working women respondents and 42.0 per cent of the non-working women were non vegetarian. Woman who takes non-vegetarian diet has better nutritional status than those who take vegetarian diet because non-vegetarian foods like meat, poultry and fish are rich in good quality protein, which helps in body building and they also provide B vitamins. A special feature of flesh foods is their content of vitamin B_{12} which is absent in plant foods.

18. 90.0 per cent working women were taking cereal legume combination in the meals whereas 82.0 per cent non-working women respondents have taking in her meals as a cereal legume combination.

19. Snacks in between the meal was more preferred by the working women respondents, 50.0 per cent took it one time while 35.0 per cent took 2 or

more times in between the meal. 55.0 per cent of the non-working women respondents never took snacks in between the meals. It is observed that working women are always in hurry in morning so they prefer to take snacks at evening time when they came back to their homes. They feel it necessary from health point of view to take at least one snack in evening time to receive the energy they spend during working and to maintain their health and working efficiency.

20. 51.0 per cent working women respondents had taken dinner, 24.0 per cent had lunch and only 25.0 per cent had breakfast as their major meal. In case of non-working women 62.0 per cent of them had lunch as their major meal. Due to the working hours of the respondents of working group majority of them were having heaviest major meal at night time. It was observed that working women feel relaxed at night time and can give more time to kitchen as compared to morning.

21. 35.0 per cent working women preferred to eat weekly, 18.0 per cent fortnightly and 55.0 per cent monthly outside the house. In case of non-working women respondents 18.0 per cent eat weekly, 10.0 per cent fortnightly and 48.0 per cent monthly outside the house. Working women respondents preferred more in weekly and monthly due to sound earning and she want to change meal in a month as well as save herself from cooking task. In Indian culture there is no freedom for a women either working or housewife to take food daily outside the home that is in restaurants and hotels etc. and it is not very good from health point of view too, because the preference of women observed for meal outside the home was mainly for fast foods which contains high fat and more spices.

22. 50.0 per cent of working women and 44.0 per cent non-working women respondents were eating in front of T.V. 5.0 per cent working and 14.0 per cent non-working women were eating in kitchen, 24.0 per cent working and 40.0 per cent non-working women respondents were eating in dining room. 21.0 per cent working women while on the go as they were not have much time because of working condition. Women have a burden of domestic work, either she is working or housewife so she does not want to waste her time in eating and she prefer to take her food in front of T.V. for entertainment of herself with fooding.

23. 45.0 per cent of the working women themselves took the decision regarding meals while only 15.0 per cent was in the case of non-working women group. In the non-working group, in the decision regarding meal 34.0 per cent depend on husbands view, 36.0 per cent on children, while, 15.0 per cent used seasonal food in their meals.

24. Pressure cooking was frequently used by the women, 72.0 per cent among the working women and 68.0 per cent among the non-working group of women respondents were using pressure cooking. Working women were less using frying cooking while non-working women (24.0 %) were adopted frying cooking. Working women have shortage of time so she want to finish her cooking task as early as possible and being aware of nutritional losses during cooking, she prefers pressure cooking which save her time as well as nutrients. While in case of housewife having proper time for cooking and lack of nutrition knowledge, she prefers frying with pressure cooking.

25. 54.0 per cent of the working women and 59.0 per cent of the non-working women respondents washed the vegetable after cutting.

Majority of the women knew the disadvantages of it but they followed of their habit. 46.0 per cent of the working women and 41.0 per cent of the non-working women were washed vegetables after peeling.

26. Working women were aware about their health, they were taking more pulses, green leafy vegetables, fruits and milk in their diet daily. In non-working women category they were taking more roots and tubers in their daily diet as compared with working women respondents. It is observed that, as income increases, there is an increase in the consumption of protective foods such as pulses, fruits, milk and dairy products, which while adding to calories contribute significantly to the increase in other nutrients whose intake is particularly lacking in the diet of the poor.

27. Mean energy intake of the respondents was 2020.3 Kcal in the working women and 1803.5 Kcal in the non-working women respondents. The energy intake of working women in the age group 25-30 years was increased by 21.6 per cent and in the non-working women in the age group 35-40 years by 4.6 per cent. The energy intake of working women was decreasing with age, it might be due to the busy schedule of their work activities that they ignore their diet. Age group of the working women respondents was negatively correlated with energy intake whereas age of non-working women respondents was positively correlated to energy intake.

28. Mean protein intake was 50.1 g by working women whereas 46.8 g by non-working women respondents: Working women have taken more protein (+7.6 %) in age group 30 to 35 years whereas non-working women respondents have taken less protein (-13.6 %) intake in 25 to 30

years age group. The correlation coefficient was found to be non-significant. Proteins are the important constituent of tissues and cells of the body. Protein supplies the body building material and also provides the energy. Proteins are one of the most important nutrients required by the body and should be supplied in adequate amounts in the diet. Thus, the habitual diets of vegetarians in India based on cereal and pulse has indeed a rational basis.

29. In the working women the mean fat intake was 23.2 g while in case of non-working women it was 21.2 g which is greater than the recommended dietary allowance of 20 g. The fat intake among the working women in the age group of 25–30 years was increased by 19.0 per cent while in the non-working women in age group 35 – 40 years by 13.0 per cent. Fat is a concentrated source of energy and it supplies per unit weight more than twice the energy furnished by either protein or carbohydrate. Fat is an important component of diet and serves a number of functions in the body.

30. In the working women respondents in the age group of 25-30 years the calcium intake was deficit by 1.4 per cent while in the non-working women respondents this figure was 9.8 per cent. Calcium is an essential element required for several life processes. As the structural component, calcium is required for the formation and maintenance of skeleton and teeth. The correlation coefficient in working women group was positively correlated and in non-working women group it was non-significant.

31. In the working group the mean iron intake was 24.6 mg and in non-working women group was 23.2 mg against the recommended dietary

allowance of 30 mg per day. In the working women in the age group 25-30 years iron intake was deficit by 22.0 per cent while in the non-working women in the age group 35-50 years iron was most deficit by 24.7 per cent. The correlation coefficient for working women group was (-0.2150) and for non-working women group, it was (-0.3411).

32. Mean β-carotene intake by the respondents was 1161.0 μg for working women and 1006.9 μg for non-working women respondents. β-carotene intake in the age group of 25-30 years in case of working women was deficit 68.8 per cent while in non-working women by 64.1 per cent. The correlation coefficient was non-significant at 5.0 per cent level of significance in both groups working and non-working women.

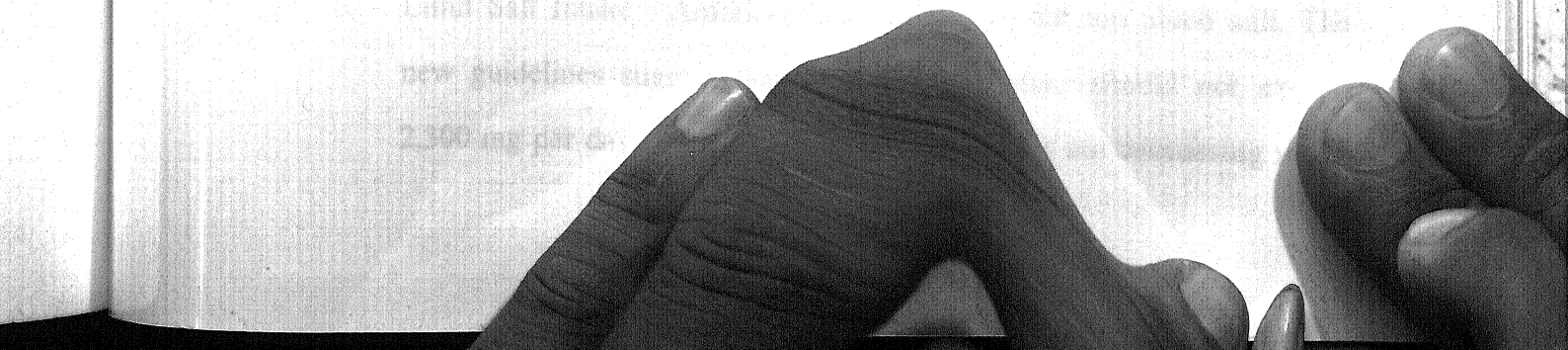
33. Mean thiamine intake was 1.41 mg for working women respondents and 1.44 mg for non-working women. Its intake was more than the recommended dietary allowance in both the groups. The richest source of thiamine is yeast and the outer layers of cereals like rice, wheat and millets. Thiamine is concerned in the proper utilization of carbohydrates in the body and in the absence of adequate amounts of thiamine full utilization of sugars and starches for meeting the energy needs is adversely affected.

34. In the working women in the age group 25-30 years, riboflavin intake was deficit by 12.7 per cent while in the non-working women group in 30-35 years it was deficit by 38.2 per cent. Riboflavin as a part of a coenzyme is essential for several oxidation processes inside the cell and is concerned with energy and protein metabolism. There is good evidence that poor Indian diets which contain little milk are generally

deficient in riboflavin. The correlation coefficient in working women group was 0.0109 and in non-working women group was 0.2054.

35. Non-significant relationship have been found between awareness and nutrients intake in both group however, it can be concluded that the mean intake of nutrients such as protein, fat, iron and calcium is higher in the working women in comparison to non-working women.

SUGGESTIONS AND POLICY IMPLICATIONS



Suggestions, recommendation and policy implications

1. Balance Calorie Intake: Balance the amount you eat with the amount of energy you burn. For moderately active women between the ages of 25 and 50, this amounts to approximately 2,000 calories per day.

2. 30 minutes Exercise Every Day : Ideally to maintain optimal health women should engage in a minimum of thirty minutes of exercise every day, and should aspire to work towards 50 minutes per day to maintain weight and prevent weight gain. Women who have recently lost weight are recommended to get a minimum of 60 to 90 minutes of exercise daily.

3. Eat nutritious Foods : It is vital that you consume only those foods that might be considered 'highly dense' with regard to nutrition. It isn't enough to simply eat plenty of food; you need to eat the right kinds of food. Eating a variety of foods high in nutrients and low in saturated and Trans fats, cholesterol, added sugars and salt will result in the best possible health outcome.

4. Eat Your Fruits and Vegetables : Women eating 2,000 calories per day, should consume a minimum of 2 cups of fruit and 2 ½ cups of vegetables every day.

5. Avoid Over-processed Foods : It is vital that you consume as many foods in their natural state as possible. Fresh vegetables, fruit and protein are prime examples.

6. Limit Salt Intake : Americans are consuming far too much salt. The new guidelines suggest that daily sodium intake should not exceed 2,300 mg per day. Not surprisingly, many people are consuming much

more than this, as much as 5,000 mg per day if their diets are high in processed foods.

7. Consume Whole Grains : You should consume a minimum of three servings of grains per day, and aspire to eat whole grains whenever possible.

8. Eat Fish Twice Per Week : Fish, particularly fatty fish such as salmon, contain beneficial fatty acids that promote brain development and proper functioning.

9. Take Small Steps : To maintain weight loss over time and promote a long term healthy outcome, it is important that you make small changes in your diet and activity level, to gradually build your body up to a state of health and well being. Restricting caloric intake suddenly and exercising too strenuously can be dangerous, particularly if you led an inactive lifestyle prior to now.

10. Choose a Variety of Foods: Be creative with your diet and try not to eat the same foods every day. For example, when selecting vegetables incorporate dark green, orange, leafy, starchy, legumes and other vegetables into your diet. Don't limit yourself to one type of vegetable.

11. Limit Fat Intake: It is important that you limit the amount of fat you consume to between 20 and 35 per cent of calories.

12. Information and health education programmes for women are needed to help them to understand the components of a healthy diet and to ensure adequate access to health services. Further research studies on socio-cultural practices, dietary practices, intra-household food distribution, women's physical activity patterns as well as life styles, seasonal food

insecurity and other related factors are urgently required to obtain a fuller picture of high risk populations for both extremes of BMI.

13. Awareness generation is needed in a campaign mode so that supplementary nutrition does not become substitute feeding, sound food habits should be promoted for preventing non-communicable disease.

14. " WHO's domain is health. But it is clear that without proper education, health suffers. And without proper health, good education is not possible. In this our work is linked and it depends on each other. An effective school health programme, consisting of four core components, health-related policies, water and sanitation, skills-based health education and school health services – can be one of the most cost-effective investments a nation can make to simultaneously improve education and health."



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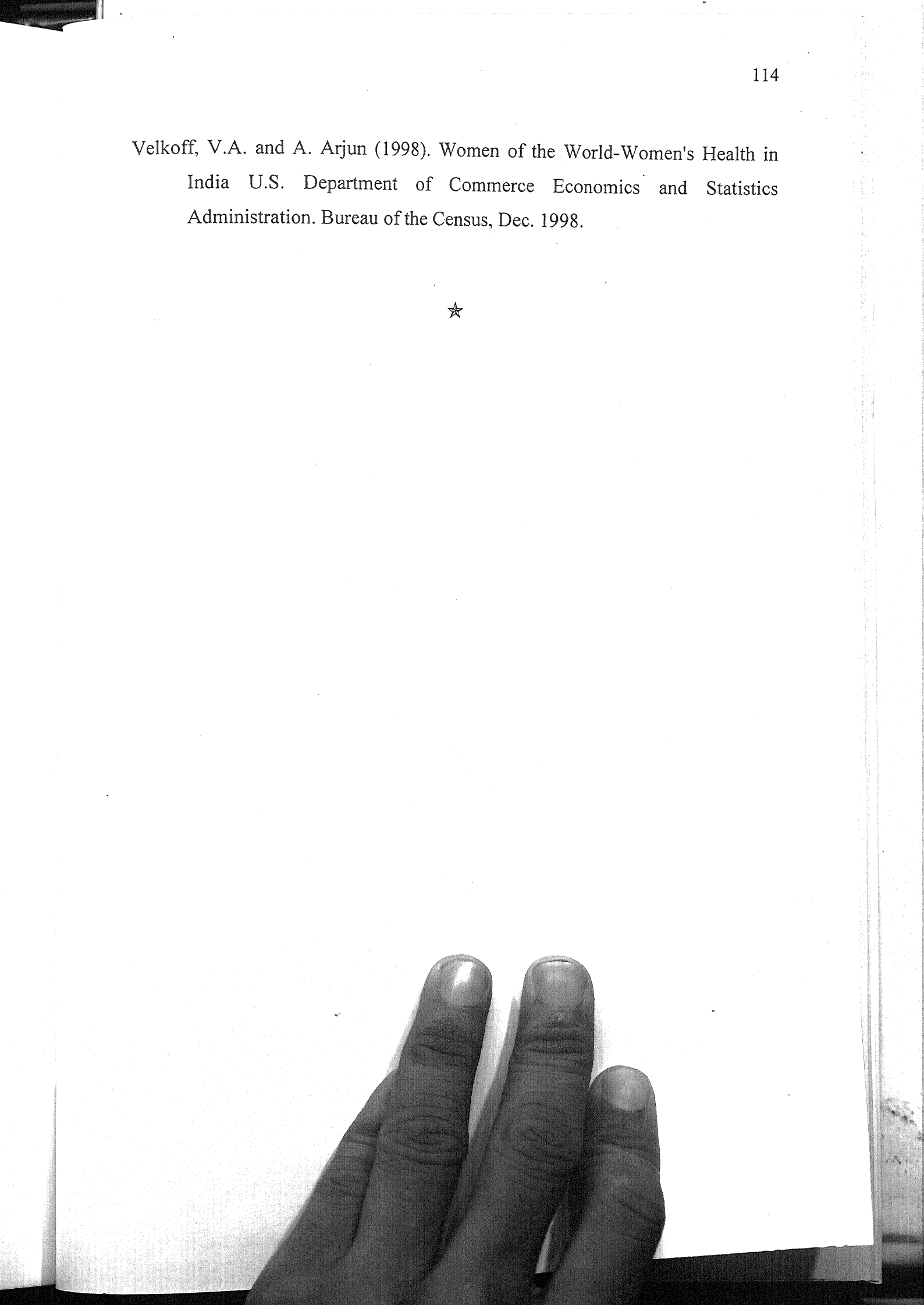
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APPENDICES



APPENDICES

INTERVIEW SCHEDULE

GENERAL INFORMATION OF THE RESPONDENT :

(1) Name of the Respondent :

(2) Address :

(3) Age :

(4) Education :

(i) Illiterate (ii) Primary (iii) Middle (iv) High School (v) Above

5. Caste :

(i) Upper caste (ii) Middle Caste (iii) Lower caste

6. Marital Status :

(i) Married (ii) Unmarried

7. Type of family :

(i) Nuclear (ii) Joint

8. Family Size :

9. Occupational Status :

(i) Service (ii) Business (iii) Housewife (iv) Labour

10. Total Income per month :

Service	Business	Labour	Land holding	Animal Source	Any other	Total

11. Per Capita income :

12. Material possession :

i. Pressure cooker
ii. Washing machine
iii. Cooking gas
iv. Tape recorder
v. Sofaset
vi. Almirah
vii. Television
viii. Refrigerator
ix. Sewing machine
x. Others

ANTHROPOMETRIC ASSESSMENT :

i. Height
ii. Weight
iii. Body mass index

CLINICAL ASSESSMENT :

1. General appearance
 - i. Healthy
 - ii. Unwell
 - iii. III
2. Hair
 - i. Normal
 - ii. Lack of Luster
 - iii. Thinnes or sparseness
 - iv. Dispigmentation of hair
 - v. Easy pluckability
3. Face
 - i. Normal
 - ii. Diffuse depigmentation
 - iii. Moon face
 - iv. Pale
 - v. Naso labial blyssibacia
4. Eyes
 - i. Normal
 - ii. Pale conjunctiva
 - iii. Bitot's Spot
 - iv. Itching
 - v. Xeropthalamia
5. Lips
 - i. Normal
 - ii. Fissuring at corners
 - iii. Swollen
 - iv. Puffy
6. Tongue
 - i. Normal
 - ii. Oedema of tongue
 - iii. Scarlet and raw tongue
 - iv. Atrophic papillae

7. Teeth
 - i. Normal
 - ii. Mottled enamel
 - iii. Carries

8. Gums
 - i. Normal
 - ii. Spongy
 - iii. Bleeding gums

9. Skin
 - i. Healthy
 - ii. Dryness
 - iii. Flaky
 - iv. Pellagrous dermatitis

10. Nails
 - i. Normal
 - ii. Brittle
 - iii. Ridged
 - iv. Spoon shaped

11. Posture
 - i. Normal
 - ii. Knock-Knee
 - iii. Bowed legs
 - iv. Fleeting joint pain



ASSESSMENT OF MORBIDITY PATTERN

Disease	Frequently	Occasional	Never
Headache			
Cold & Cough			
Backache			
Indigestion/Gastric problem			
Fever			
Joint pain			
Other severe problem			

FOOD FREQUENCY TABLE

Food groups	Daily	Twice in a week	Once in a week	Occasionally	Rarely	Never
Cereals						
Pulses						
GLV						
Roots and tubers						
Other vegetables						
Fruits						
Fats and oils						
Milk						
Flesh foods						
Egg						
Sugar and Jaggery						

ASSESSMENT OF KNOWLEDGE OF NUTRIENT INTAKE :

1. Do you know, you comes in which category? Yes/No

 (i) Sedentary (ii) Mederate (iii) Heavy

2. Do you know, how much energy is required to you according to your work? Yes/No

 (i) 1875 kcal (ii) 2225 kcal (iii) 2925 kcal (iv) 1200 kcal

3. Do you know from which sources you receive energy in your diet? Yes/No.

 (i) Fruits (ii) Vegetables (iii) Cereals (iv) None of these

4. Do you know how much protein is needed to you according to your work ? Yes/No

 (i) 50 gm (ii) 40 gm (iii) 30 gm (iv) 20 gm

5. Do you know dietary sources of protein? Yes/No

 (i) Pulses and legumes (ii) Meat and fish (iii) milk (iv) All of these

6. Have you heard about Thiamin? Yes/No

 (i) Protein (ii) Vitamin (iii) Carbohydrate (iv) Fat

7. What are the dietary sources of Thiamin? Yes/No

 (i) Cereal and grains (ii) Nuts and pluses (iii) Meat (iv) All of these

8. Do you know which disease occur due to deficiency of Thiamin? Yes/No

 (i) Beriberi (ii) Scurvy (iii) Night blindness (iv) Goitre

9. Do you know dietary sources of Iodin? Yes/No

 (i) Salt (ii) Milk (iii) Cereals (iv) Pulses

10. Do you know which disease occur due to deficiency of Iodine? Yes/No

 (i) Goiter (ii) Anemia (iii) Night blindness (iv) Rickets

11. Do you know which nutrient is needed in more by pregnant and lactating women as compare to other women? Yes/No

 (i) Calcium (ii) Iron (iii) Folic acid (iv) All of these

12. How you obtain these nutrients?

 (i) By taking more cereals

 (ii) By taking more pulses

 (iii) By including milk in diet

 (iv) By taking more vegetables

 (v) All of the above

13. Do you know which disease occur due to deficiency of Iron? Yes/No

(i) Goiter (ii) Anemia (iii) Night blindness (iv) None of these

14. Do you know dietary sources of Iron? Yes/No

(i) Green leafy vegetables

(ii) Jaggery

(iii) Germinated legumes

(iv) All of the above

15. Do you know utensil of which metal should be use for cooking of green leaf vegetables? Yes/No.

(i) Iron (ii) Bronze (iii) Aluminum (iv) Steel

16. Do you know why green leafy vegetables should be cook in iron utensils? Yes/No

(i) To increase iron content in food

(ii) To increase protein content in food

(iii) To increase calcium content in food

(iv) None of these

17. Do you know how iron deficiency anemia can be diagnosed? Yes/No

(i) Tiredness

(ii) Breathlessness

(iii) Paleness of nails and conjunctiva of eyes

(iv) Low hemoglobin level

(v) All of the above

18. Do you know dietary sources of Vitamin A? Yes/No

(i) Green leafy vegetables

(ii) Yellow fruits like papaya, mango, pumpkin, and carrot

(iii) Milk and milk products

(iv) Egg and fish

(v) All of the above

19. Do you know which disease occur due to deficiency of Vitamin A? Yes/No

(i) Goiter (ii) Anemia (iii) Night blindness (iv) None of these

20. Do you know how Vitamin A deficiency can be diagnosed? Yes/No

(i) Person can not see in dim light

(ii) Person can not see in day light

(iii) Person can not differentiate color

(iv) All of the above

21. Do you know which vitamin is obtained from Sunlight? Yes/No

(i) vitamin A (ii) Vitamin B (iii) Vitamin C (iv) Vitamin

22. Which disease occur in adult due to deficiency of Vitamin D?

(i) Osteomalacia (ii) goiter (iii) Both of these (iv) None of these

23. Do you know what is under nutrition ?

(i) Protein intake is less

(ii) Energy intake is less

(iii) Vitamin intake is less

(iv) All of the above

24. What are the symptoms of under nutrition in a woman?

(i) Body weight less than normal

(ii) Anemia due to iron deficiency

(iii) Night blindness due to Vitamin A deficiency

(iv) All of the above

25. Do you know which food is known as complete food for a child upto the age of six month? Yes/No

(i) Mother milk (ii) Banana (iii) Dahl (iv) Khichari

ASSESSMENT OF DIETARY HABIT FOR NUTRITIONAL AWARENESS

Please describe you dietary habit during past one year

1. Who takes the decision regarding meal?
2. How would you describe your food habits? Veg/non-veg.
3. If Non-vegetarian, how often you take these food?

(i) Daily (ii) Weekly (iii) Fortnightly (iv) Monthly

4. Do you take cereal legumes combination? Yes/No
5. If yes, what is its advantage?

(i)

(ii)

6. Do you take wheat bran in your diet? Yes/No
7. Do you consume salad regularly ? Yes/No
8. Do you use reused fried oil? Yes/No
9. How many major meals do you take? 1/2/3/ more

10. How many times in a day you eat snack in between meals ?
 (i) Never (ii) One (iii) Two or more
11. Which is you heaviest major meal?
 (i) Breakfast (ii) Lunch (iii) Dinner
12. Type of cooking method mostly used at home?
 (i) Pressure cooking
 (ii) Frying
 (iii) Roasting
 (iv) Other
13. Do you wash vegetable after pealing/ cutting ? Yes/No
14. Do you go for favorite food, which are too expensive? Yes/No
15. How often do you eat meals cooked outside your home?
 (i) Never (ii) Per day (iii) Weekly (iv) Monthly
16. Where do you eat your meal?
 (i) In front of T.V.
 (ii) In kitchen
 (iii) In Dinning room
 (iv) While on the go
17. Do you eat at same time every day? Yes/No
18. If not why?
 (i)
 (ii)
19. If you prepare meals do you plan menu in advanced? Yes/No
20. Do your food habits insure a nutritionally balanced diet? Yes/No

ASSESSMENT OF DIETARY INTAKE

Menu pattern by 24 hour recall method

Meal	Menu	Raw ingredients used		Total cooked quantity (household measures)	Quantity consumed by respondent
		Ingredients	Quantity		
Morning					
Break fast					
Mid day					
Lunch					
Tea					
Dinner					
Bed time					



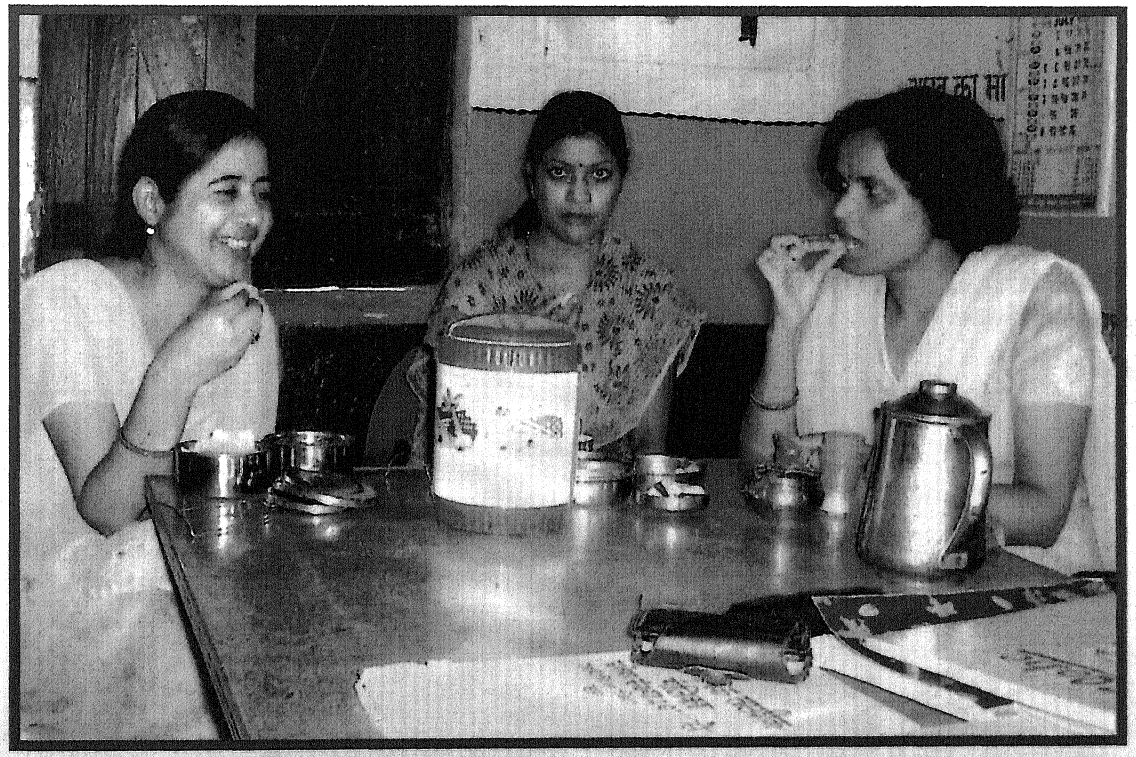
Interviewer interviewing the non-working women



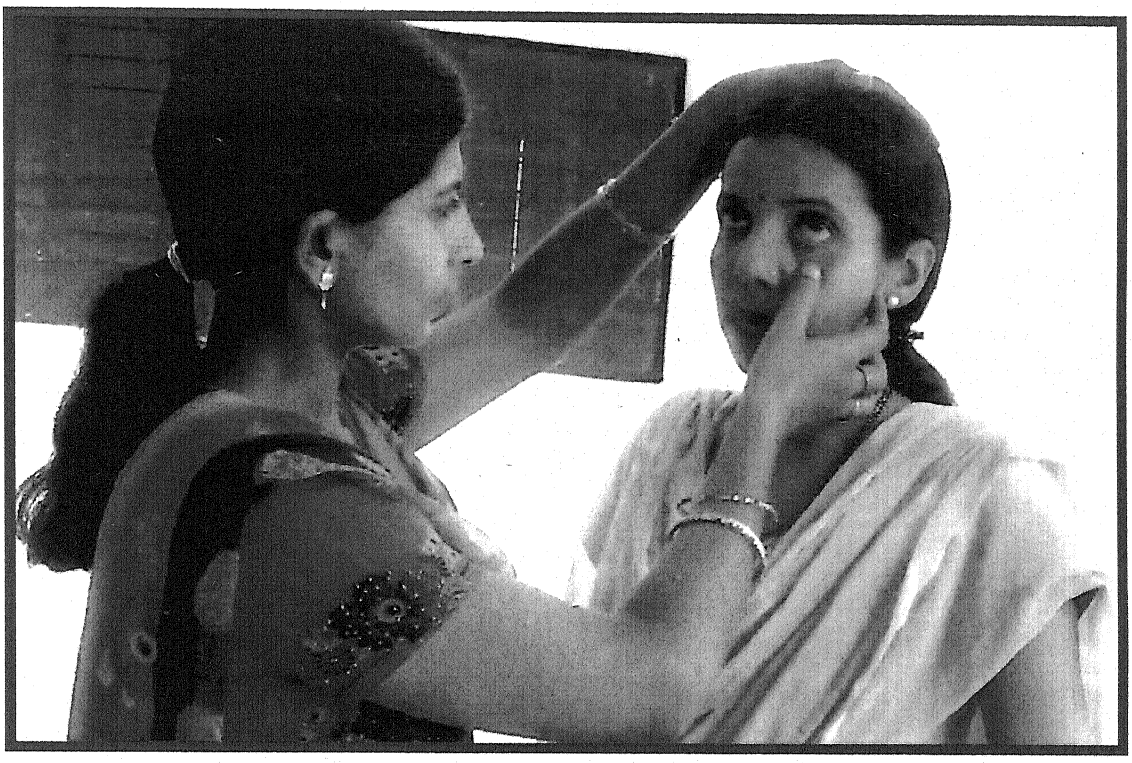
Interviewer interviewing the working women



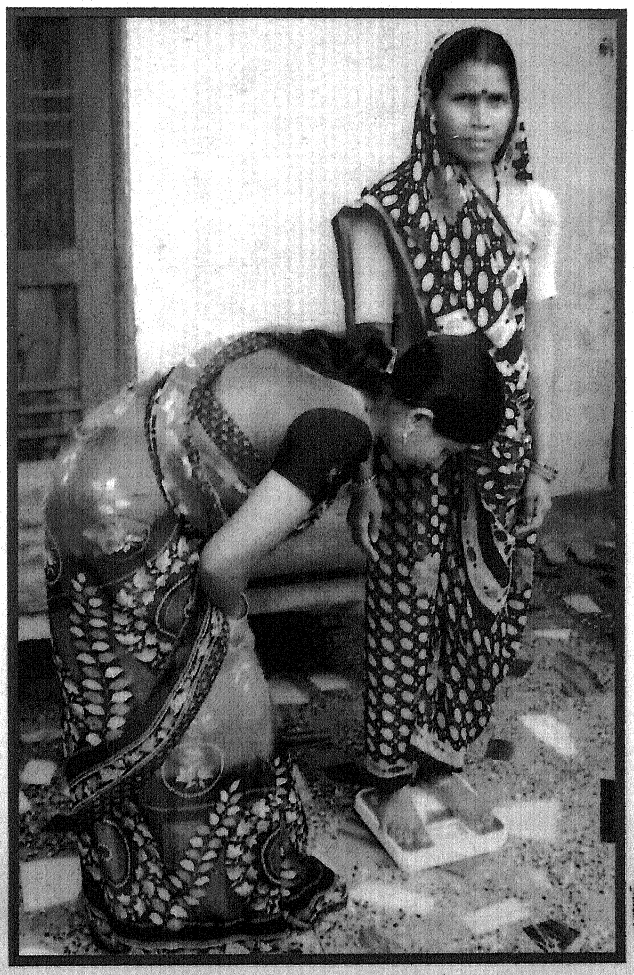
Dietary pattern of non working women



Dietary pattern of working women



Clinical assessment of respondent



Measurement of body weight

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PREFACE

The first Prime-Minister of India, Jawaharlal Nehru said, "you can tell the condition of a nation by looking at the status of its women". This is absolutely true. Woman of any nation is the mirror of its civilization. If women enjoy good status it shows that the society has reached a level of maturity and sense of responsibility while a decadent Image conjures up if the opposite is true.

From time immemorial, the women in this land of ours were treated as a sort of thing. Her placing in the society was not at par with other human being. She has no rights. She cannot move nor do anything at her will. In Hindu Shastras, she has been branded just like animals. From the verses of Ramayan as written by Mr. Tulsi Das, "Dhol, ganwar, shudra, pashu, naari–Ye sab tadan ke adhikari," one may easily draw inferences as to what status has been granted to our mothers. But in the modern era the status of woman get changed, the women have left the secured domain of their home to empower themselves and their family. In such a situation provision of nutritious recipes involving minimum cooking time, dietary modification that fulfill physiological needs of women would help them to great extent. This package contains information about dietary guidelines for healthy eating, food pyramid for women and food groups in balanced healthy diets which will help in maintaining normal health. Recipes that are incorporated in this package are based on the criteria of minimal cooking time, cost and convenience. It is hoped that this package will be useful to working and non-working women in maintaining their health.

Archana Singh

DIETARY TIPS FOR WOMEN TO LIVE A HEALTHY LIFE

- RDA for working and non-working women.
- Nutritional problems among working and non-working women.
- Dietary guidelines for women.
- Healthy eating : the basics in carbohydrates, protein and fat.
- Food pyramid for women.
- Food groups in balanced healthy diets.
- Ideal diet for working women.
- Tips and strategies for a healthy eating plan.
- Recipes for working and non-working women.
- Advantages of suggested recipes.
- Suggestions.

WOMAN

In Oxford dictionary a woman is defined as female of man, the female sex, a female servant. Nutritional health for women is important for supporting the growing body and for preventing future health problems and to produce healthy child. A woman can be defined as –

W - Wife, Wealth, Woeful, Worship, Warden, Weak, Weapon

O - Obedient, Omnipotence, Odalisque

M - Mother, Malnourished, Merciful, Morbid, Mature

A - Aspiration, Anemic, Attractive, Authority, Assistant.

N - Nurture, Neglected, Necessity, Novel

Recommended Dietary Allowances for Working and Non-Working Women

Nutrient	Working women			Non-working women Sedentary
	Sedentary	Moderate	Heavy	
Energy (Kcal)	1875	2225	2925	1875
Protein (g)	50	50	50	50
Fat (g)	20	20	20	20
Calcium (mg)	400	400	400	400
Iron (mg)	30	30	30	30
Vitamin A (µg)	600	600	600	600
β– carotene (µg)	2400	2400	2400	2400
Thiamine (mg)	0.9	1.1	1.2	0.9
Riboflavin (mg)	1.1	1.3	1.5	1.1
Niacin (mg)	12	14	16	12
Pyridoxine (mg)	2.0	2.0	2.0	2.0
Ascorbic acid (mg)	40	40	40	40
Folic acid (µg)	100	100	100	100
Vitamin B_{12} (µg)	1	1	1	1

Nutritional Problems Among Working and Non-Working Women

Women are more likely to suffer from nutritional deficiencies than men are, for reasons including women's reproductive biology, low social status, poverty and lack of education. This nutritional deficiency has two major consequences for women, first they become anemic and second they never achieve their full growth, which leads to an unending cycle of undergrowth as malnourished women cannot give birth to a healthy baby.

Major nutritional deficiency disorders among women are:

1. Iron deficiency anemia: Iron deficiency and anemia are the most prevalent nutritional deficiencies in the world. The body uses iron to produce hemoglobin, a protein that transports oxygen from the lungs to other tissues in the body via the blood stream, and anemia is defined as having a hemoglobin level below a specific level(less than 12 grams per deciliter of blood [gm/dl] in women). Most women who develop anemia in less developed countries are not consuming enough iron - rich foods or are eating foods that inhibit the absorption of iron. However, malaria can also cause anemia and is responsible for much of the endemic anemia in some areas. Other causes of anemia include hookworm and schistosomiasis, HIV/AIDS, other micronutrient deficiencies. Iron deficiency anemia cause fatigue, reduce work capacity, and make people more susceptible to infection.

2. Iodine deficiency disorder: Failing to meet the body's iodine requirements impairs mental functioning and can cause goiter (a swelling of the thyroid gland) and hypothyroidism, a condition marked by fatigue and weakness. Among adolescent girls, iodine deficiency may cause mental impairments, impede physical development, and harm school performance. Although programs to iodized salt have reduced the prevalence of iodine deficiency disorders dramatically in the past 10 years, there is still wide variation in household access to iodized salt. At least 130 countries have serious pockets of iodine deficiency disorders.

3-Vitamin A deficiency disorder: VAD can cause growth retardation and impaired vision remains a significant public health issue among populations that do not consume enough vitamin A, which is found in animal products and certain fruits, including mangoes. Severe VAD causes blindness, less severe VAD impairs the immune system, making people more susceptible to infection and putting them at increased risk of death. Concurrent infection with parasites and illnesses such as diarrhea, as well as having several pregnancies too close together, can exacerbate VAD.

Dietary Guidelines for Working and Non-Working Women

Healthy eating begins with learning how to "eat smart". It's not just what you eat, but how you eat. Paying attention to what you eat and choosing foods that are both nourishing and enjoyable helps support an overall healthy diet.

- **Take time to chew your food** : Chew your food slowly, savoring every bite. We tend to rush though our meals, forgetting to actually taste the flavors and feel the textures of what is in our mouths. Reconnect with the joy of eating.
- **Avoid stress while eating** : When we are stressed, our digestion can be compromised, causing problems like colitis and heartburn. Avoid eating while working, driving, arguing, or watching TV (especially disturbing programmes or the news). Try taking some deep breaths prior to beginning your meal, or light candles and play soothing music to create a relaxing atmosphere.
- **Listen to your body** : Ask yourself if you are really hungry, and stop eating when you feel full. It actually takes a few minutes for your brain to tell your body that it has had enough food, so eat slowly. Eating just enough to satisfy your hunger will help you remain alert, relaxed and feeling your best, rather than stuffing yourself into a "food coma" !
- **Eat early, eat often** : Starting your day with a healthy breakfast can jumpstart your metabolism, and eating the majority of your daily caloric allotment early in the day gives your body time to work those calories off. Also, eating small, healthy meals throughout the day, rather than the standard three large meals, can help keep your metabolism going and ward off snack attacks.

Healthy eating : The basics on carbohydrates, protein and fat

Despite what certain fad diets would have you believe, we all need a balance of carbohydrates, protein, fat, fiber and vitamins to sustain a healthy body. But what exactly is a carb? And how much protein is too much? Understanding dietary guidelines is the first step in developing your own healthy eating plan.

Carbohydrates

Carbohydrates–food composed of some combination of starches, sugar and fiber – provide the body with fuel it needs for physical activity by breaking down into glucose, a type of sugar our cells use as a universal energy source.

Fiber

Fiber is a special kind of the carbohydrates that your body is unable to digest. A diet rich in fiber – from whole grains and fruit – lowers your risk of diabetes, heart disease, and digestive problems like constipation and irregularity; it also lowers cholesterol and triglycerides in the blood. Fiber helps support a healthy diet by :

- Helping you feel fuller faster and longer
- Keeping blood sugar levels even
- Maintaining a healthy colon

The bottom line : Carbohydrates are a great source of tasty, inexpensive energy. But overeating carbs, like anything else, can cause weight gain – whatever is not needed for bodily functions and energy will end up being stored as fat – so choose your carbs wisely !

Protein needs

Our bodies need protein to maintain our cells, tissues and organs. Getting the right amount of protein is a fine balance: eat too little and your body may start to break down its own tissues; eat too much and it can damage your kidneys. Aim for protein sources that contain the highest amounts of protein with the lowest amount of saturated fat within a healthy serving.

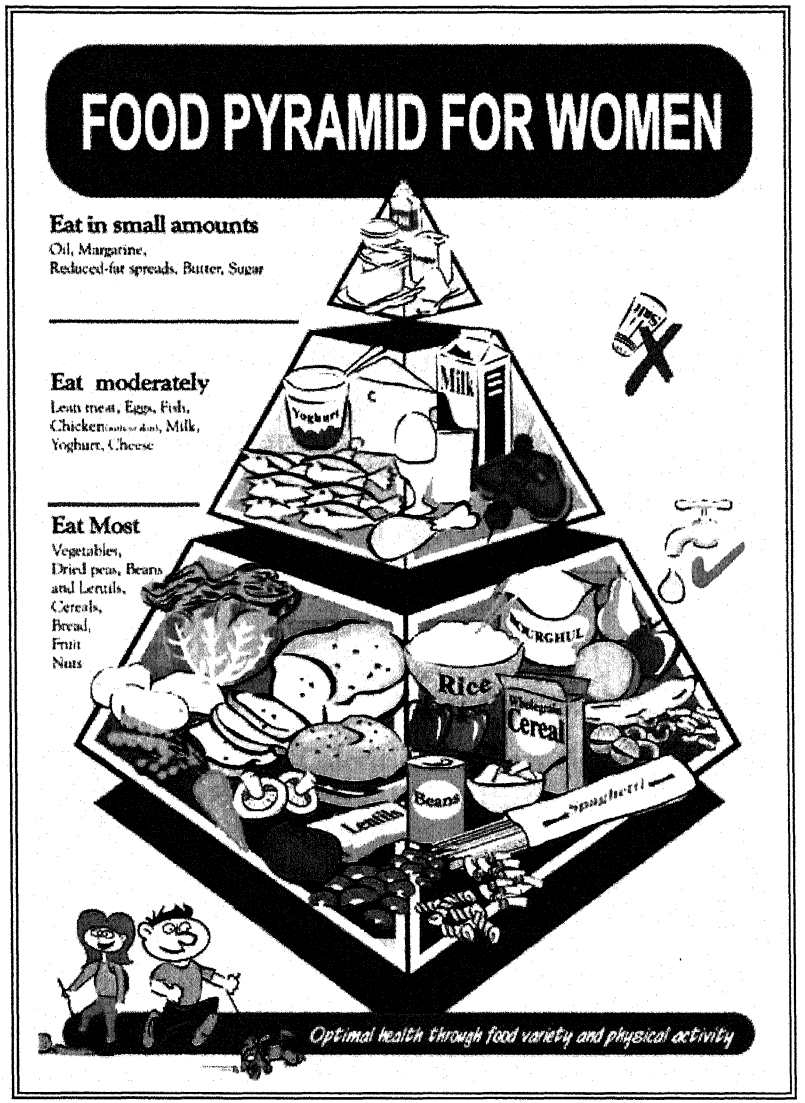
Fat

We've been taught to fear fats and oils, but fresh, high quality fats are absolutely essential to good health. Our bodies use fat to do everything from building cell membranes to performing key functions in the brain, eyes and lungs, and use the different types of **"good" fats (unsaturated, mono-saturated, poly-unsaturated, omega 3 and 6)** in different places depending on what they need to do.

Good Fats : Essential to Healthy Eating

The "bad" fats – trans and saturated fats – increase the risk for certain diseases. Trans fats, or trans fatty acids, are the "bad guys" of the nutrition world – and they can be sneaky villains, hiding out in places you would never look to find them. Created by adding hydrogen to liquid vegetable oils to make them more solid, trans fats give foods a longer shelf life. While they might be beneficial to processed food manufacturers, trans fats are detrimental to you–they raise bad (LDL) and lower good (HDL) cholesterol, putting you at increased risk for heart disease.

The bottom line : The key to healthful diet plan is to substitute good (monounsaturated, polyunsaturated, and omega 3 and 6) fats for bad fats (saturated and trans fats).


FOOD PYRAMID FOR WOMEN
Eat in small amounts
Oil, Margarine,
Reduced-fat spreads, Butter, Sugar
Eat moderately
Lean meat, Eggs, Fish,
Chicken, Milk,
Yoghurt, Cheese
Eat Most
Vegetables,
Dried peas, Beans
and Lentils,
Cereals,
Bread,
Fruit
Nuts
Milk
Yoghurt
BURGHUL
Rice
Cereal
Beans
Lentils
Spaghetti
Optimal health through food variety and physical activity

Food Groups In Balanced Healthy Diet

To ensure that you get a well-balanced diet that provides the daily nutrients you need, the Harvard School of Public Health recommends you focus your diet on the following six basic food groups.

Vegetables and Fruits : Vitamin, antioxidant and fiber powerhouses



Women need 5 to 9 servings of fruits and vegetables per day. Dark green and brightly coloured fruits and vegetables contain many antioxidants and bioflavonoid in addition to vitamins, minerals and fiber.

Serving Information : One serving is equal to 2 cups for a dark green low-starch vegetable like broccoli or leafy greens. One fruit serving is typically equal to one small to medium sized fruit or ½ cup berries.

Food Sources : Sources for fruits and vegetables include dark green and brightly coloured vegetables, beans, peas, broccoli, collard greens, apples, oranges, avocado (yes it's a fruit!) etc. Calorie counts vary significantly, so keep track of calories.

Choose: Go for the bright the deeper the colour, the greater the concentration of vitamins, minerals and antioxidants–broccoli, mustard greens, butternut squash and sweet potatoes are several excellent choices. For fruits, choose fresh or frozen and focus on variety. Berries are cancer-fighting, apples provide fiber, oranges and mangoes offer vitamin C, and so on.

Avoid : Fruit juices can contain up to 10 teaspoons of sugar per cup; avoid or dilute with water. Canned fruit often contains sugary syrup, and dried fruit, while an excellent source of fiber, can be high in calories. Avoid fried veggies or ones smothered in dressings or sauces – you may still get the vitamins, but you'll be getting a lot of unhealthy fat and extra calories as well.

Whole grains for long-lasting, healthy carbohydrate energy



The words stone-ground, multi-grain, 100 % wheat, or bran, don't necessarily mean that a product is whole grain. Look for the words "whole grain" or "100 % whole wheat", and check the ingredients to make sure each grain listed is specified as whole grain. Women should eat five or six 1- ounce (30g) servings of grains per day.

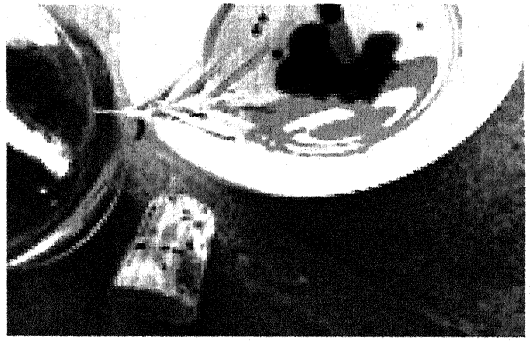
Serving Information : One serving is equal to one slice of low carb bread (30 g), 30 g or ¾ cup of low carb breakfast cereal, 1 ounce of carb controlled pasta, or ¼ cup steel cut dry oats.

Food Sources : Sources for whole grains include brown rice, stone ground whole grain bread and pasta, steel cut oatmeal, wild rice and amaranth.

Choose : Dark breads, whole wheat, brown rice, oatmeal, barley, millet, toasted wheat cereals.

Avoid: Refined grains (breads, pastas, and breakfast cereals that are not specified as whole grain), "whole grain" cereals foods that also contain a lot of sugar (example : whole grain Cookie Crisp cereal).

Healthy Fats and Oils to support brain and body functions



Women need to consume healthy fats every day. Fats are an important source of essential fatty acids, such as vitamin E. It is important to consume sufficient Omega 3 oils such as fish and flax and to reduce consumption of saturated fat found in red meats, and trans fat or hydrogenated oils found in processed foods.

Serving Information : One serving is equal to one teaspoon. Women need up to 7 servings of healthy fats per day, which are already found in much of the food we eat.

Food Sources : Sources for healthy fats include fish, flax, seeds, nuts, vegetable oils like olive oil, peanut oil, or other nut oils, such as walnut and almond.

Choose: Vegetable oils (Olive, canola, peanut) avocados, fatty fish (salmon), nuts, and seeds.

Avoid: Damaging" good fats by exposing them to heat, light or air for example, keep your bottles of canola or olive oil in the refrigerator. Avoid trans fats and saturated fats.

Nuts, Seeds and Beans : Healthy protein alternatives



These plant foods are excellent sources of protein, fiber, vitamins, and minerals.

Choose: Good choices include black beans, navy beans and lentils and nuts like almonds, walnuts and pecans. Soy products are great for protein.

Avoid : Salted or sugary nuts; refried beans.

Fish, Poultry and Eggs : The best animal protein sources



Eating omega-3 fatty acid-rich fish can reduce the risk of heart disease. Good choices also include chicken, turkey and eggs (Vegetarians and vegans can substitute vegetable protein for these sources, but may want to consider an omega-3 supplement). Most women need a minimum of four to six ounces of meat, legumes or other protein sources per day.

Serving Information : According to the USDA, one serving is equal to ½ ounce. Other sources consider 2 ounces to be one serving size.

Food Sources : Sources for proteins include meats, poultry, fish, seafood, dry beans, nuts and seeds.

Choose: Lean, white meat; egg whites; fatty fish like mackerel, lake trout, herring, sardines, canned light tuna, catfish and wild salmon.

Avoid: Fish that's high in mercury such as shark, swordfish, king mackerel, tilefish and albacore tuna.

Milk and other dairy products for calcium and vitamin D



Dairy products provide a rich source of calcium, necessary for bone health. Most are fortified with vitamin D, which helps the small intestine absorb calcium.

Women should consume about 3 cups of dairy products, or milk-alternatives each day because dairy products are an important source of calcium which can help you lose the fat around your belly. Low fat or reduced fat dairy products are the best choice. If you choose not to consume dairy products, alternative calcium sources include sardines, tofu, and calcium-fortified foods.

Serving Information : One serving is equal to 1 cup of milk, 1 cup of yogurt, 1½ ounces of cheese.

Sugars

Sugar and sweets add excess calories and very little nutrition. Women do not require any sugar to be consumed on a daily basis.

Serving Information : One serving is equal to one teaspoon.

Food sources : Sources for sugar and sweets include soft drinks, candy, starches such as potatoes, corn, white flour pastries and breads, all sugars, syrups, honey and molasses.

Salt

Women need less than 2300 mg per day of sodium, so be sure to read the labels of prepackaged and processed foods.

Serving Information : One serving is equal to one dash of salt, which contains 155 mg of sodium.

Food sources: Sources for salt or sodium include processed foods, canned vegetables, salt and prepared foods.

Ideal Diet For Working Women

Is there such a thing as ideal diet? And where do you find it? The answers surprisingly lie in a very common-sensical approach to food. All the nutrients to make you experience a vibrant good-looking body and keep your energy level high and consistent. It should leave you free from a nagging concern over extra pounds and extra inches. The diet should facilitate your body to stabilize to an optimum level unimpelled by toxic waste; which is assimilated into the body after incomplete utilisation/digestion of food.

This diet is based on consumption of a lot of fresh fruits and vegetables as they contain a lot of natural water. The primary component in our body cells is water. So these fresh fruits and vegetables can be most easily digested, absorbed and converted to energy for our day to day activities. The more processed, denatured and dead the food you have,the more energy your body will require to digest it.

This diet programme does not believe in starvation or crash dieting to lose weight. The base is a food group combination and making energy available for body activities other than digestion. Once on this diet programme, the body can easily breakdown foods and eliminate the undigested food-whereas a wrong combination of food consumption would result in accumulation of the waste in the body resulting in weight gain and toxicity.

Wholesome fresh foods brimming with nutrients can nourish your body and reflect the effect on your skin, hair etc. It can additionally help solving symptoms of problems regarding digestion, constipation, allergies, headaches, menstrual problems, pimples, arthritis, eczema, heart problems and other diseases; if followed religiously. If these exciting and innovative aspects of fitness and weight loss are followed you will reward yourself abundantly with a youthful, slender body, beauty, vitality-physical, emotional and spiritual health.

A) Breakfast : Begin your day with fresh fruits on an empty stomach-they pass from the stomach to the intestines at a very rapid pace. Digestion, absorption and conversion of food to our energy unit glucose is done rapidly. This glucose is to be

necessarily supplied in sufficient quantities to our brain cells to let our working be efficient. Now, assuming you eat a heavy breakfast consisting of one, two or three concentrated, processed items like bread, butter, egg etc. then a big amount of energy will have to be diverted to digest this breakfast. This is the cause of a groggy or drowsy feeling after sometime of consuming breakfast; as the glucose supply to the brains is reduced. Which is why you find women dozing in trains and buses on their morning trip to work. You have put your body to a bigger job of digesting all that you have ingested. Two or three varieties of dry fruits in the midmorning hours for the ones who are not trying to lose weight or who feel slightly hungry is permissible.

B) Lunch: Lunch can consist of a combination of cereal or pulse with a lot of vegetables-cooked and raw. So whole wheat flour, bajra or jowar rotis or moong sprouts should be combined with a lot of high water content veggies. This food combination is again to facilitate only limited amount of energy to be diverted for digestion of food. So the concentration in office work can be still maintained.

C) Snack: An ideal evening snack, if required, can be a vegetable sandwich containing no cheese or butter and should be made preferably of brown bread. On the days home a hot clear vegetable soup could be a better alternative.

D) Dinner: For dinner you can have a complete meal of chapatti, vegetable, dal and salad. This meal should be consumed at least two or three hours before you go to sleep. The amount of food consumed should be left on your hunger pangs to decide and not on your taste-bud.

E) Small changes, large benefits: Non-vegetarian foods like meat, chicken, fish, egg etc. can supplement the basic diet in dinner - but it is not essential for gaining strength. The importance of fiber is being stressed in every area of health care. Remember meat has no fiber content at all. Milk and non-veg proteins can easily be substituted by processed soya protein. It is a good quality protein and when processed is void of allergens and toxins to be easily absorbed in our body. It has proven to be a good source of calcium and iron as well as has a protective effect on our body; for e.g. it has an anti-carcinogenic effect.

Tips and Strategies for A Healthy Eating Plan

So, how do you actually implement all this information on healthy eating into your life? The following tips can help you ease your way into a healthier diet.

1. **Read the labels** – Always look at the first ingredient listed – seeing sugar, corn syrup, salt, or some other unhealthy ingredient high on the list probably means it isn't the healthiest choice.
2. **Keep a food diary** – For one week, write down everything (no cheating!) that you eat or drink every day. If you can, keep track of serving sizes. At the end of the week, review your diary and decide where you need to make improvements.
3. **Set goals** – Your goal can also be as simple as ordering a salad rather than a less than healthy appetizer or side whenever you go out to eat.
4. **Take baby steps** – Try one small change at a time, and build on it. If you aren't getting enough fruit, you can add berries to your cereal in your morning. Or switch to low fat dairy, and easily eliminate some saturated fat from your diet.
5. **Make smarter choices within food groups** – For example, choosing whole fruit rather than juice will save calories and earn you extra fiber. Or, switch to whole grain bread or pasta in place of your usual refined carbohydrate choices.
6. **Don't be the food police** – There's no need to cut out all of your favourite foods. You can enjoy sweets and fried foods in moderation, as long as they are an occasional part of your overall healthy diet. Food is a great source of pleasure, and pleasure is good for the heart – even if those French fries aren't !
7. **Get moving** – Exercise will make any healthy eating plan work even better. While a healthful diet can reduce your risk of many diseases, adding regular physical activity can do even more.

LOW COST RECIPES FOR WORKING AND NON-WORKING WOMEN



Maize Puttu

1. MAIZE PUTTU

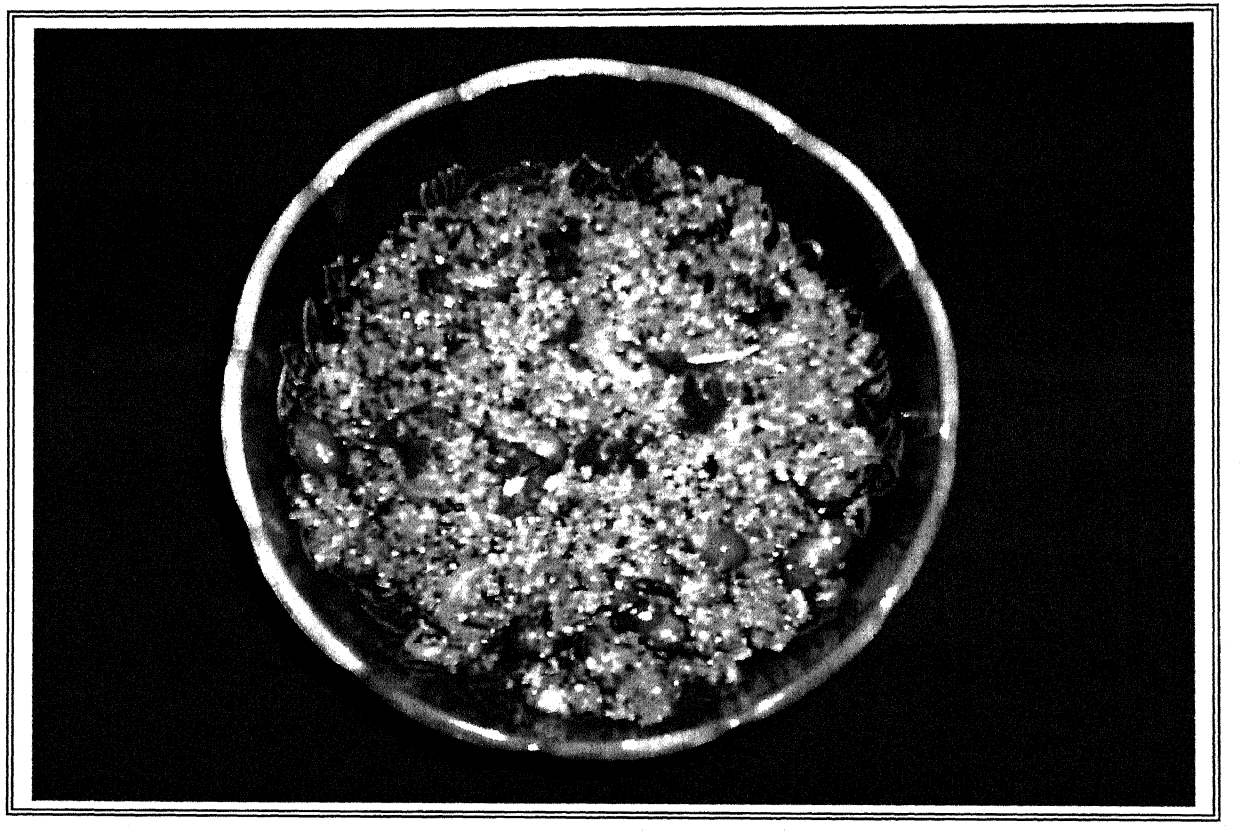
Ingredients	Weight (g)
Broken maize	35
Bengal gram dhal	25
Jaggery	25

Method – Roast broken maize and Bengal gram dhal and powder them. Dissolve jaggery in water and strain through a sieve or cloth. Prepare a batter of maize and dal with the jaggery syrup. Steam cook the batter on a piece of cloth and cut into pieces with the help of knife.

Nutritive value -

Protein	-	9.18 g
Fat	-	2.01 g
Iron	-	2.78 mg
Calcium	-	37.5 mg
Energy	-	428 Kcal
Fibre	-	1.25 g

Time of preparation	-	15 minutes
Cost	-	Rs. 3.0 only



Jowar Upma

2. JOWAR UPMA

Ingredients	Weight (g)
Broken jowar	50
Roasted groundnut	15
Oil	7
Seasoning material	As required

Method – Seasoning material is fried in oil, broken jowar is added and fried till slightly brown. Water is added and cooked till soft. Roasted groundnuts are added and cooked for a few more minutes.

Nutritive value

Protein	-	9.12 g
Fat	-	13.92 g
Iron	-	2.96 mg
Calcium	-	24.05 mg
Energy	-	330.00 Kcal
Fibre	-	1.26 g

Time of preparation - 10 minutes
Cost - Rs. 2.50 only



Groundnut Bada

3. GROUNDNUT BADA

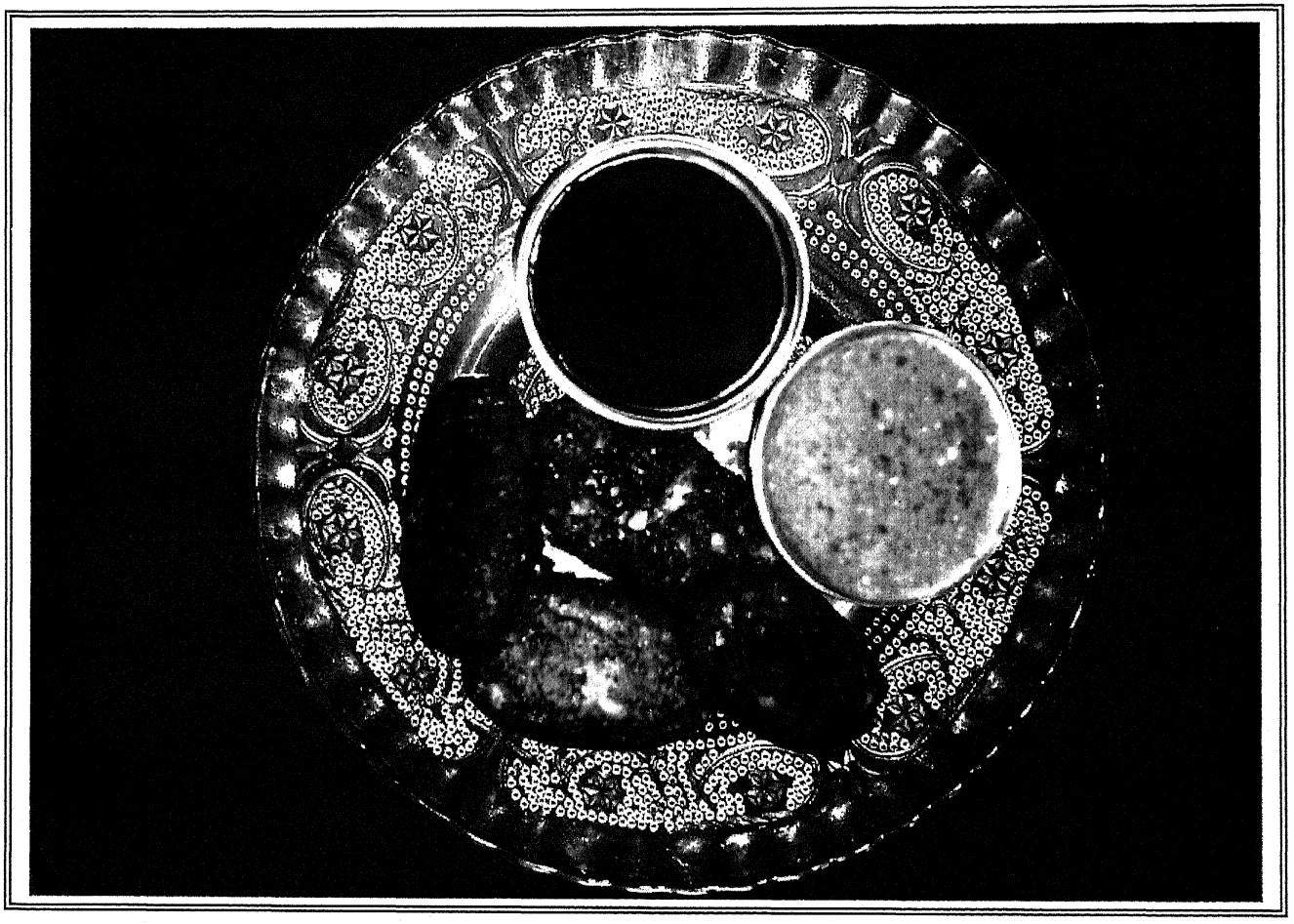
Ingredients	Weight (g)
Rice flour	125
Groundnut	25
Bengal gram dhal	15
Gingelly seeds	20
Oil	10
Zinger	5
Salt	5
Green chilli	According to taste

Method – Soak the Bengal gram dhal. Grind groundnut bengal gram dhal, gingelly seed, zinger and green chilly and mix with rice flour and make dough with the help of water. Make rolls from dough and fry in oil till light brown.

Nutritive value

Protein	-	21.60 g
Fat	-	31.14 g
Iron	-	4.17 mg
Calcium	-	327.23 mg
Energy	-	831.4 Kcal
Fibre	-	1.78 g

Time of preparation - 15 minutes
Cost - Rs. 5.0 only



Soyabean Potato Cutlet

4. SOYBEAN POTATO CUTLET

Ingredients	Weight (g)
Soybean	25
Potato	50
Green chilly	2
Garam Masala	½ teaspoon
Mango powder	5
Salt	5
Oil	10

Method – Soak the soybean in water for 3 hour. Wash it and dehusk and grind. Mix boiled potato grinded soybean, green chilly, garam masala, mango powder, coriander leaves and salt and shape them like cutlet, fry till light brown. Serve with chutney.

Nutritive value

Protein	-	11.6 g
Fat	-	14.925 g
Iron	-	2.84 mg
Calcium	-	65.0 mg
Energy	-	246.5 Kcal
Fibre	-	2.04 g

Time of preparation - 15 minutes
Cost - Rs. 3.50 only



Rice Groundnut Burfi

5. RICE GROUNDNUT BURFI

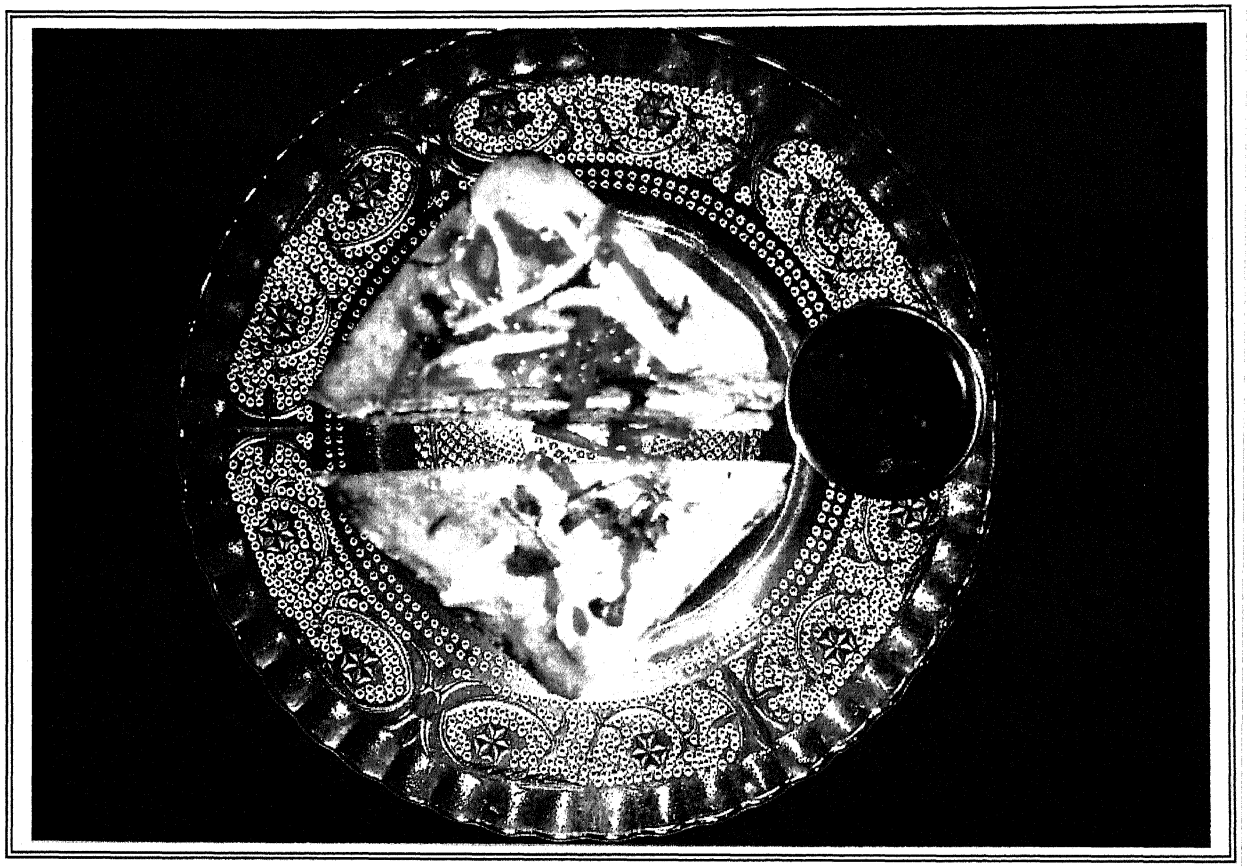
Ingredients	Weight (g)
Puffed rice	25
Roasted groundnut	25
Jaggery	25

Method – Roast the puffed rice and mix with groundnuts. Prepare a sticky syrup from jaggery. Add the puffed rice and nuts and mix quickly. Spread the above on a greased plate and cut into pieces immediately.

Nutritive value

Protein	-	8.53 g
Fat	-	10.0 g
Iron	-	3.08 mg
Calcium	-	45.0 mg
Energy	-	320.8 Kcal
Fibre	-	6.75 g

Time of preparation - 10 minutes
Cost - Rs. 4.0 only



Soyabean Dhokla

6. SOYBEAN DHOKLA

Ingredients	Weight (g)
Soybean dhal	50
Rice	50
Curd	25
Green chilli	2 in no.
Paneer	10
Turmeric	½ teaspoon
Salt	According to taste

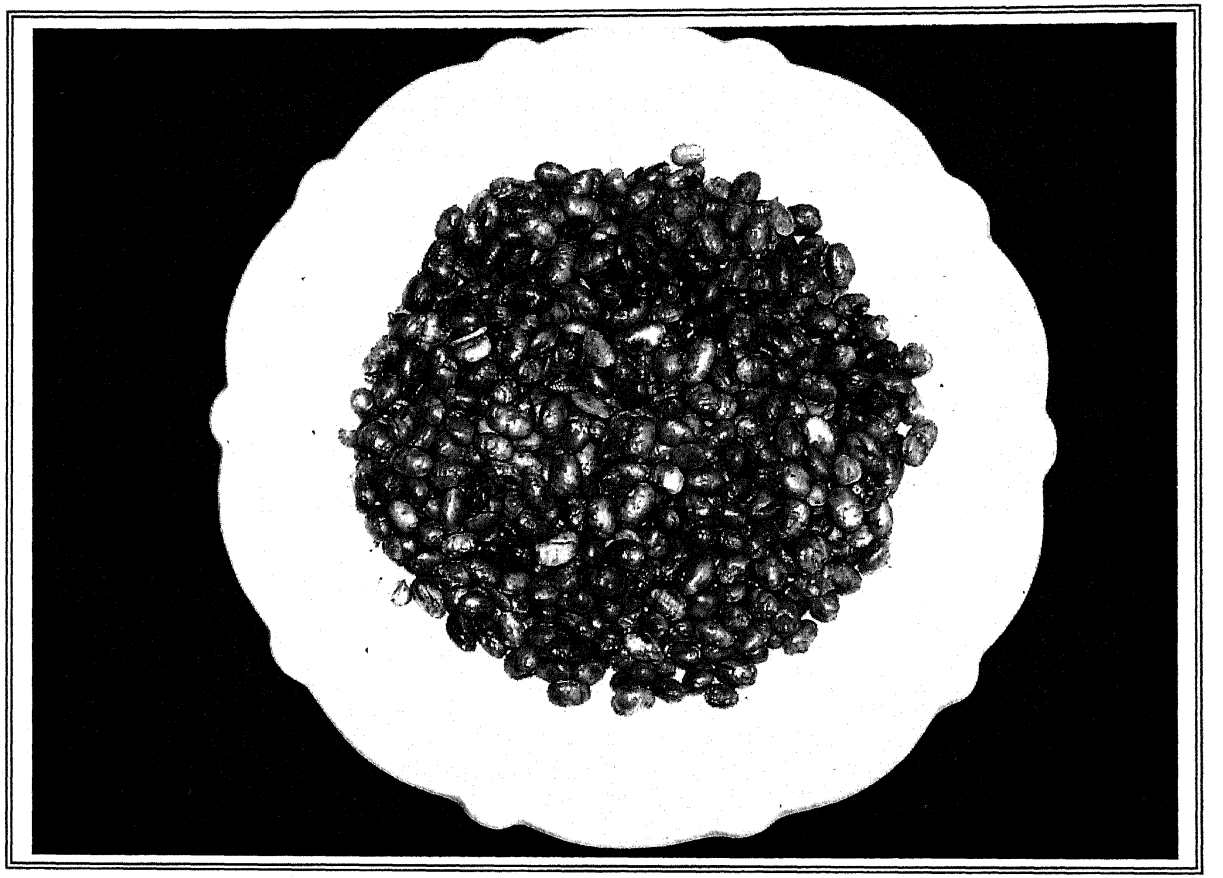
Method – Soak the rice and soybean dhal overnight, grind it and mix the curd into it. Keep it for 4-5 hours. Mix green chilli, zinger, salt and turmeric powder into it. Steam cook it for 15 minutes. Cut it into pieces and place paneer in between two slices, decorate and serve.

Nutritive value

Protein	-	26.93 g
Fat	-	13.28 g
Iron	-	6.85 mg
Calcium	-	192.8 mg
Energy	-	430.5 Kcal
Fibre	-	2.6 g

Time of preparation - 10 minutes

Cost - Rs. 7.0 only



Soyabean Nuts

7. SOYBEAN NUTS

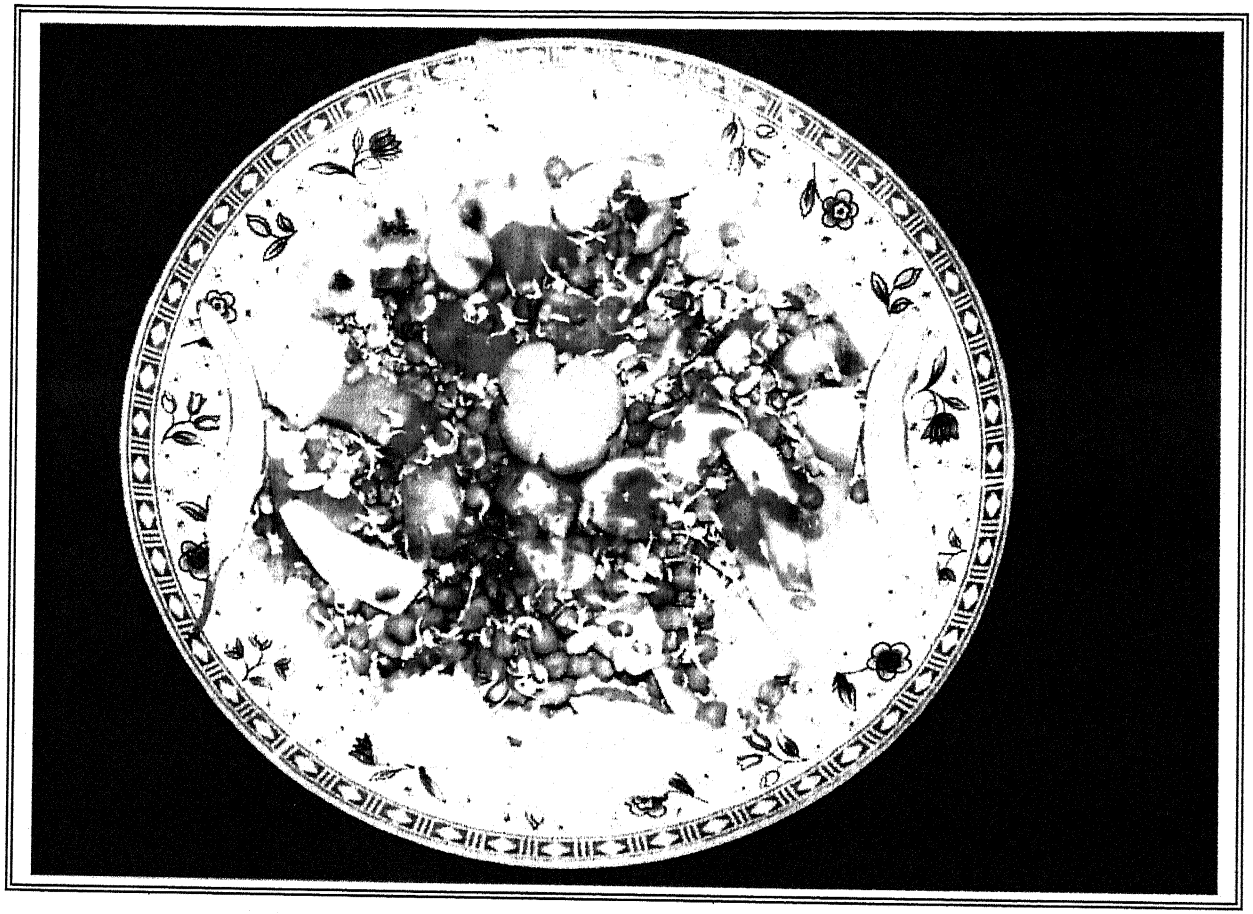
Ingredients	Weight (g)
Soybean	25
Oil	2.5
Salt	2
Red chilli powder	2
Mango powder	2

Method – Roast soybean and add oil, salt, red chilli powder and mango powder and mix well. Serve it with tea as namkeen.

Nutritive value

Protein	-	10.8 g
Fat	-	4.87 g
Iron	-	2.6 mg
Calcium	-	60 mg
Energy	-	108 Kcal
Fibre	-	0.92 g

Time of preparation - 10 minutes
Cost - Rs. 2.0 only



Sprouted Fruit Salad

8. SPROUTED FRUIT SALAD

Ingredients	Weight (g)
Apple (chopped	20
Pineapple (chopped)	10
Papaya (chopped)	20
Sprouted greengram	10
Sprouted Bengalgram	10
Sprouted soybean	10
Sprouted moth	10
Sprouted lobia	10
Sprouted groundnut	10
Chat Masala	To taste
Salt	To taste
Turmeric chutney	15

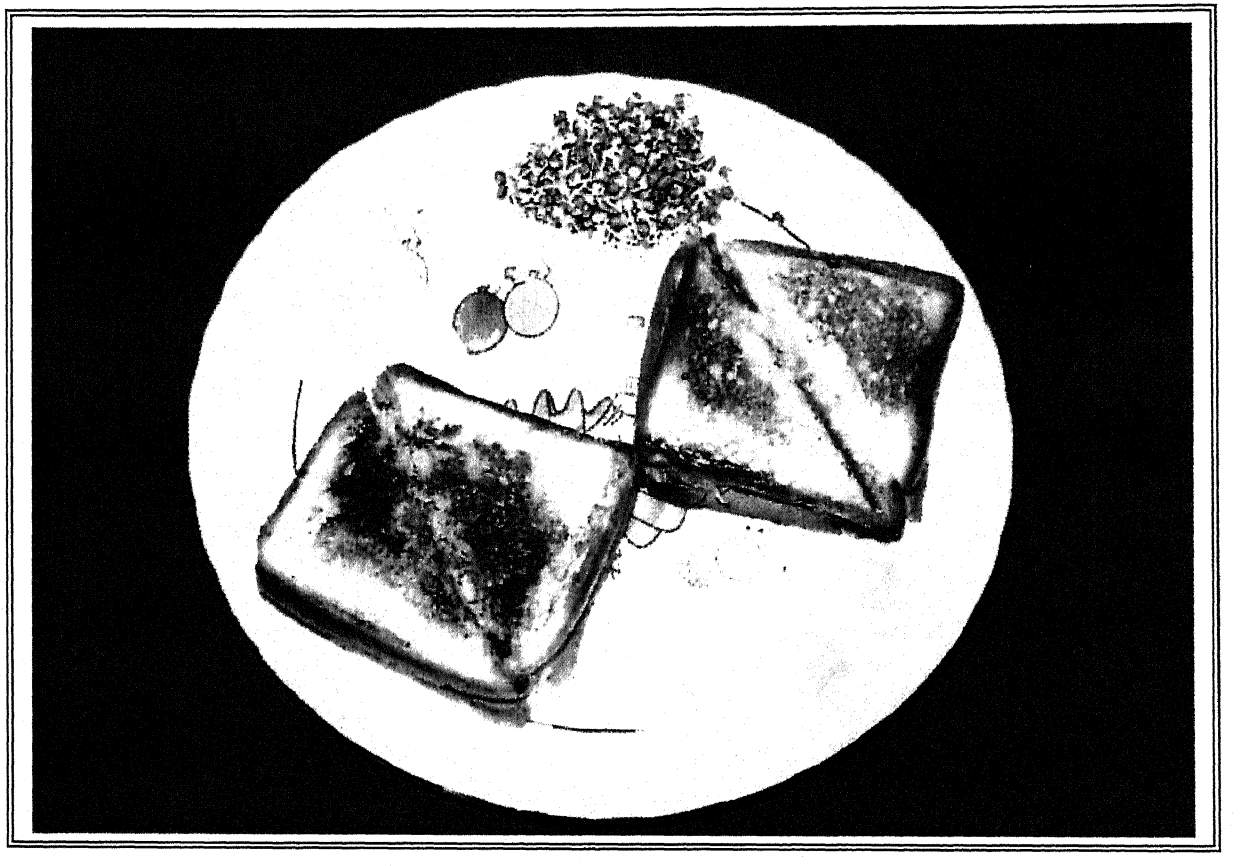
Method – Add all the sprouts in chopped fruits. Add chat masala, salt and chutney in it mix it properly.

Nutritive value

Protein	-	26.0 g
Fat	-	1.7 g
Iron	-	3.25 mg
Calcium	-	75.2 mg
Energy	-	225 Kcal
Fibre	-	1.5 g

Time of preparation - 5 minute

Cost - Rs. 5.0 only



Grilled Nutritious Sandwich

9. GRILLED NUTRITIOUS SANDWICH

Ingredients	Weight (g)
Bread	100
Potato	100
Sprouted moong	30
Carrot (grated)	30
Coriander & mint chutney	15
Butter	15
Salt	To taste

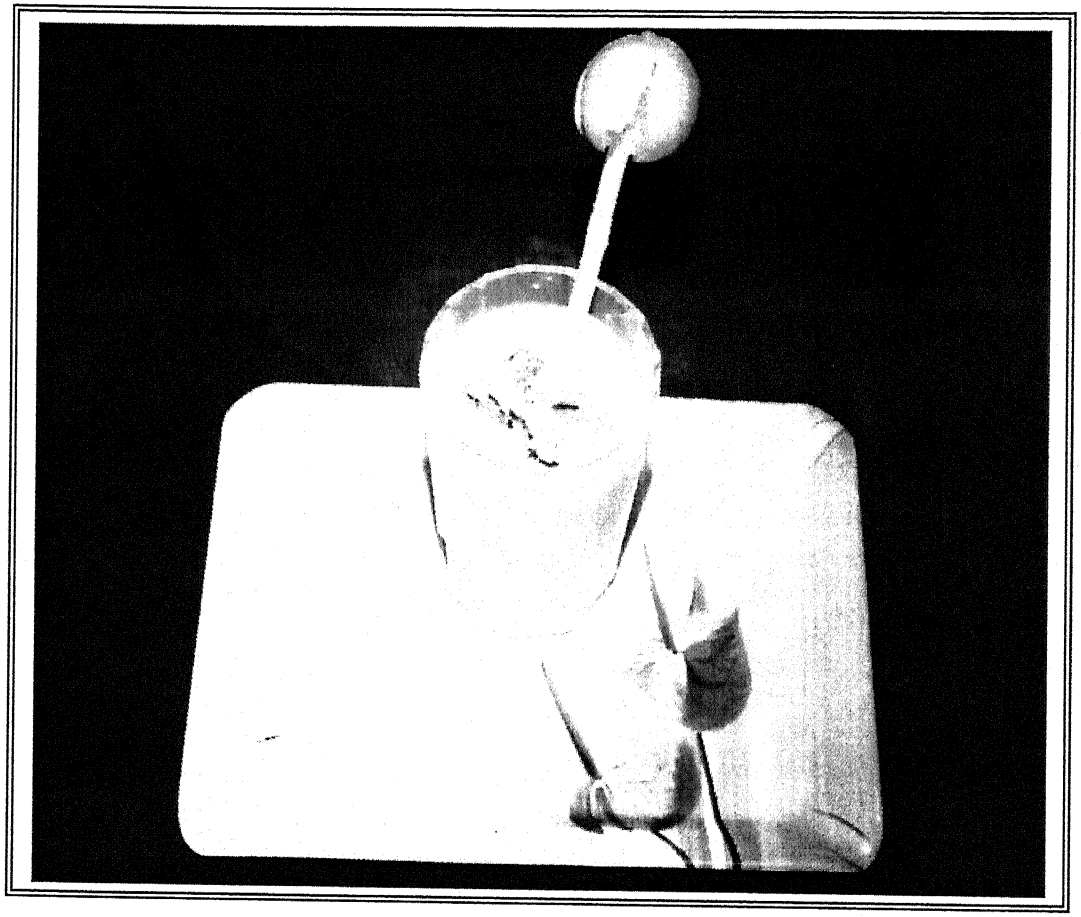
Method – Mash potato, add moong, carrot and salt in it. Mix it properly. Add coriander mint chutney in butter and blend it with hand mixture. Apply this chutney on bread. Apply potato mixture on another bread and cover it with bread (on which chutney has already been applied) and make sandwich. Bake this in a grilled sandwich maker.

Nutritive value

Protein	-	16.1 g
Fat	-	20.25 g
Iron	-	2.45 mg
Calcium	-	42.0 mg
Energy	-	633.0 kcal
Fibre	-	3.5 g

Time of preparation - minutes

Cost - Rs. 6.0 only



Beech Tropicana

10. BEECH TROPICANA

Ingredients	Weight (g)
Mango juice	150
Pineapple juice	150
Banana	100
Sugar	15
Water	150
Crushed ice	150

Method – Add all the ingredient in juicer jar and blend it properly. Add crushed ice in it and served it.

Nutritive value

Protein	-	39.2 g
Fat	-	45.3 g
Calorie	-	375.7 Kcal

Time of preparation - 5 minutes
Cost - Rs. 5.0 only

Advantages of Suggested Recipes

- Gives relief in constipation and in abdominal pain.
- Enhances iron content in the body.
- Enhances calcium content in the body
- Reduces blood cholesterol level
- Low in Calorie density.
- Rich in nutrients like protein, vitamins and minerals.
- Help in regulating bowl movements.

Suggestions

1. **Eat a variety of foods** – Choose a wide variety of foods you enjoy from the food groups in the food guide pyramid daily. Select foods within the groups that are consistent with the dietary guidelines.
2. **Balance the food you eat with physical activity maintain or improve your weight** – It not at a healthy weight, attempt to achieve it gradually by exercising more and eating fewer calorie dense foods. If sedentary exercise.
3. **Choose a diet with plenty of grain products, vegetables and fruits** – The message of this suggestion is to consume enough plant foods and dietary fibre. "plenty" is three or more vegetables, two or more fruits, and six or more grain products, preferably whole, grain products, daily.
4. **Choose a diet low in fat, saturated fat and cholesterol** – To keep total calorie intake from fats below 30 per cent of total calories, eat plenty of vegetables, fruits and grain products, choose lean meats, fish and low fat dairy products most of the time.
5. **Choose a diet moderate in sugars** – It emphasizes sources of complex carbohydrates and contribution of simple sugars to the diet.
6. **Choose a diet moderate in salt and sodium** – Diets without added salt and containing few processed foods with added salt tend to meet this guideline.

